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Topologies: The Urban Utopia in France, 1960-1970

by

Larry D. Busbea

A dissertation submitted to the Graduate Faculty in Art History in partial fulfillment of the requirements for the degree of Doctor of Philosophy, the City University of New York

2003

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June 26, 2003
Date

Rosemarie Haag Bletter
Professor Rosemarie Haag Bletter,
Chair of Examining Committee

June 26, 2003
Date

Professor Patricia Mainardi,
Executive Officer

Professor Romy Golan

Professor Kevin Murphy

Professor Rose-Carol Washton Long

THE CITY UNIVERSITY OF NEW YORK

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Abstract

Topologies: The Urban Utopia in France, 1960-1970

by

Larry D. Busbea

Advisor: Professor Rosemarie Haag Bletter

This dissertation examines the utopian architectural and urban designs of a specific group of practitioners in France during the decade of the 1960s. The study focuses on the architects, artists, critics, and theorists associated with the *Groupe International d'Architecture Prospective*, founded by the critic Michel Ragon in 1965. The diverse work of the individuals associated with the GIAP is described in relation to the socio-political context of France and the world during this period. Specifically, the dissertation discusses the debates about urban design in Paris during the mid-sixties, developments in scientific technology and the social sciences, as well as contemporaneous developments in architectural and artistic practice. The term "topology" is discussed as it related to both the mathematical determination of structures in engineering and space frame design, as well as its popular dissemination in architectural, urban, and artistic discourse. The aim of the study is to describe the complex cultural and ideological issues that faced this avant-garde during a period of intense social change.

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Table of Contents

List of Illustrations viii

Chapter 1:
- Introduction 1
- Periodization and Method 8
- Neo-Avant-garde 19
- Spatial Urbanism 29
- Plasticity and the Integration of the Arts 39
- The French Context 45
- The Theorization of Space 71

Chapter 2: The French Utopia
- Reception 83
- Fantastic, Visionary, Research 90
- Michel Ragon and the GIAP 99
- From Utopian to Prospective Urbanism 118

Chapter 3: Paris in the Tertiary Era
- The Tertiary Era as the Post-Industrial Era 138
- Paris, Constructed 148
- The Urban Phenomenon 158
- Paris Parallèle 170
- Paris Spatial 174
- Paris, Programmed 189

Chapter 4: Topologies
- Space Frames, a Selective Hisotry 200
- Topology, the Space Frame, And Beyond 215
- Groupe d'Études d'Architecture Mobile 233
- Friedman's *Architecture Mobile* 239
- Everyday Nomads 249
- Architecture Principe 261
- Charettes! 268

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Chapter 5: Conclusion:
Ambient Objects and the System
Of Architecture 273

Illustrations 312

Bibliography 418

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List of Illustrations

Chapter 1

1.1. Manifeste du GIAP, original flyer (1965).
1.2. Robert Le Ricolais, *Structural model* (c. 1960).
1.3. Pierre Szekely, *Maison-sculpture* (c. 1965).
1.4. Ionel Schein, *Maison en Plastique*, model (1956).
1.5. Nicolas Schöffer, *Centre universitaire vertical; Ville Cybernétique* (c. 1961).
1.6. Arthur Quarmby, *Corn on the Cob* (1963).
1.7. Chanéac, *Living Cell*, interior view (c. 1964).
1.8. Nicolas Schöffer, *Tour Lumiere Cybernétique*, detail (c. 1961).
1.9. Topological figures: Klein Bottle and Moebius Strip.
1.10. Pascal Hausermann, plastic house, Haute-Savoi (c.1962).
1.11. Freï Otto, *Suspended City Project* (1960).
1.12. Mathias Goeritz and Luis Barragán, *Satellite City Towers*, Mexico City (1957).
1.13. Ron Herron, *Walking City* (1964).
1.14. Kiyonari Kikutake, *Marine City* (1958).
1.15. Superstudio, *A Journey from A to B* (1969).
1.16. Pierre Restany, *Superlund* (1967).
1.17. Walter Jonas,*Intrapolis* (c.1965).
1.18. Arman,*Le murex (Accumulation. Renault no.103) (1967).*
1.19.Nicolas Schöffer, *Centre de Recherche Scientifique* (c. 1961).
1.20. Paul Maymont, *Ville Flottante* (c. 1961).
1.21. Yona Friedman, Spatial project for Tunis (1960).
1.22. Frederick Kiesler, *City in Space* Paris, Grand Palais (1925).
1.23. Le Corbusier, *Fort l'empereur* project for Algiers (1931).
1.24. Louis Kahn and Ann Tyng, *City Hall* project (1958).
1.25. Louis Kahn, *Center City Philadelphia* project (1952).
1.26. Eugène Beaudouin, Marcel Lods, and Vladimir Bodianski, *Exhibition Hall* project (1933).
1.27. Éduard Albert, tree structure project (c.1964).
1.28. Yona Friedman, *Spatial City* project (1959-60).
1.29. Yona Friedman, *Ville pont sur la Manche* [bridge city over the English Channel] project (1963); model constructed in collaboration with Eckhard Schultze-Fielitz.
1.30. Constant, *New Babylon*, model (1959).
1.31. Constant, *New Babylon; Group of Sectors seen from above* (1964).
1.32. Candilis, Josic, Woods, *Toulouse le Mirail* , project (1961).
1.33. Éduard Albert and Roger Boileau. Apartment Building, Paris, rue Croulebarbe (1958-1960); two views, photo Larry Busbea.
1.34. Claude Parent, Mossem Forughi, Hedar Ghiai, and André Bloc, *Pavillon d'Iran* [now *Fondation Avicenne*] (1968); photo Larry Busbea.
1.35. André Bloc, *Pierre Eclatée* [Shattered Stone] (1963).
1.36. André Bloc, *Cage san oiseau* [birdless cage] (1962).
1.37. André Bloc, *Sculpture Habiticle II* [habitable sculpture], Meudon, France (1964); photo Larry Busbea.

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1.38. André Bloc, *Éléments Typifiés* [type elements] (1963).
1.39. Paul Nelson and Fernand Léger, Saint-Lô Hospital, model with color scheme (1949).
1.40. José Luis Sert, *Maeght Foundation*, Alpes-Maritime (1964).
1.41. André Wogensky, *Necker Hospital Center*, Paris (1968); photo Larry Busbea.
1.42. Jean Ginsberg, Apartment Building, rue du Docteur-Blanche, Paris (1953); photo Larry Busbea.
1.43. Alison and Peter Smithson, *House of the Future* project (1956).
1.44. Ionel Schein and Yves Magnant, *Mobile Hotel Room Unit* (c. 1956).
1.45. Nicolas Schöffer, Maison à Cloison Invisible [house with invisible partitions] (1955); plan/model.
1.46. Nicolas Schöffer, Maison à Cloison Invisible [house with invisible partitions] (1955); view at the Salon des traveaux publics, Paris, 1957.
1.47. Raymond Lopez, *Caisse Centrale d'Allocation Familiales*, rue Viala, Paris (1952-1959); photo Larry Busbea.
1.48. Jean Balladur, office building, rue de la Victoire, Paris (1958); photo Larry Busbea.
1.49. Henri Vicariot, new terminal at Orly (1956-1961).
1.50. Éduard Albert,et al., Jussieu Faculty buildings, Paris (1965).
1.51. Robert Camelot, Jean de Mailly, Bernard Zehrfuss, et al., *Palais du CNIT*, Paris, La Defense (1953-58).
1.52. Le Corbusier, *Unité d'Habitation*, Marseilles (1945-52).
1.53. Henri Bernard, *Maison de la Radio* (1963).
1.54. Eugène Beaudoin, Raymond Lopez, et al. *Ensemble Maine Montparnasse* (c. 1964); as published in Schein, *Paris construit*, p. 78.
1.55. Roger Boileau, Jacques-Henry Labourdette, *Grands Ensembles de Sarcelles* (1955-72).
1.56. Roger Boileau, Jacques-Henry Labourdette, *Grands Ensembles de Sarcelles* (1955-72).

Chapter 2

2.1. *L'architecture d'aujourd'hui* no. 102 (1962).
2.2. Michel Ragon, ed., *Les Visionnaies de l'architecture* (1965).
2.3. Virilio and Parent at their exhibition at Arc et Senans (c. 1965).
2.4. Pierre Soulages...
2.5. Serge Poliakoff...
2.6. Jean Fautrier, *I'm Falling in Love* (1957).
2.7. Yves Klein, *Leap into the Void* (1960).
2.8. Performance with Schöffer's *Cysp I* at the Unité d'Habitation in Marseille, 1956.
2.9. Performance with Schöffer's *Cysp I* at the Unité d'Habitation in Marseille, 1956.
2.10. Michel Ragon, *Le livre de l'architecture moderne* (1958).
2.11. Michel Ragon, *Où-vivrons nous demain?* (1963).
2.12. Michel Ragon, *Paris: hier, aujourd'hui, demain* (1965).
2.13. Michel Ragon, *La cité de l'an 2000* (1968).
2.14. Victor Vasarely, *Idom M.C.* (1967).
2.15. Victor Vasarely *Orion M.C.* (1964).

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2.16. Yona Friedman, *L'architecture mobile* (1970).

Chapter 3

3.1. Jean-Luc Godard placing the soap boxes that would appear in his *Deux ou trois choses je sais d'elle* (1967).
3.2. Ionel Schein, *Paris construit* (1970).
3.3. Ionel Schein, *Les Thibaudières ensemble at Boussy-Saint-Antoine* (1967).
3.4. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978); view.
3.5. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978); elevation, circa 1962.
3.6. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978); view, photo Larry Busbea.
3.7. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978); view, photo Larry Busbea.
3.8. Raymond Lopez, *L'avenir des villes* (1964).
3.9. *Schéma directeur de la région Parisienne* (1965).
3.10. *Schéma directeur de la région Parisienne* (1965); Traffic studies of Paris (left) and the region (right).
3.11. *Schéma directeur de la région Parisienne* (1965); proposed traffic circulation scheme for central Paris.
3.12. *Schéma directeur de la région Parisienne* (1965); schematic zoning.
3.13. *Schéma directeur de la région Parisienne* (1965); Southwest zone.
3.14. *L'architecture d'aujourd'hui* no.88 (1960).
3.15. André Bloc and Claude Parent, *Paris parallel* (1960); 3 stages of implementation.
3.16. *L'architecture d'aujourd'hui* no 96. (1962).
3.17. Claude Parent, et al., *Paris parallèle* (1962); circulation scheme.
3.18. From *Arts* no. 858 (1962), p. 5.
3.19. Paul Maymont, *Floating City* projects (c. 1960).
3.20. Paul Maymont, *Floating City* projects (c. 1960); plan showing disposition of towers and connecting bridges.
3.21. Paul Maymont, *Floating City* projects (c. 1960); detail of tower, showing platforms.
3.22. Paul Maymont, *Floating City, Study for the Bay of Tokyo* (1959).
3.23. Paul Maymont, Plan for Paris and the Plaine de Montesson (1961).
3.24. Paul Maymont, Plan for Paris and the Plaine de Montesson (1961/2)
3.25. Paul Maymont, Project for Paris (c. 1963).
3.26. Paul Maymont, Project for Paris (1964/5).
3.27. Paul Maymont, Project for Paris (1964/5).
3.28. Paul Maymont, *Paris sous la Seine* (1962).
3.29. Paul Maymont, *Paris sous la Seine* (1962).
3.30. Paul Maymont, *Paris sous la Seine* (1962-4); elevation and section of Notre Dame hub.
3.31. Paul Maymont, *Paris sous la Seine* (1962-4); rendering of the Place Notre Dame.

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3.32. Paul Maymont, *Paris sous la Seine* (1962-4); rendering of the Place Notre Dame, looking across to the Quai de Montebello.
3.33. Yona Friedman, *Ville du Bois de Boulogne* (1957).
3.34. Yona Friedman, *Ville du Bois de Boulogne* (1957); plan and elevation.
3.35. Yona Friedman, *Paris Spatial* (1962)
3.36. Yona Friedman, *Paris Spatial* (c.1963-4)
3.37. Yona Friedman, *Paris Spatial* (c.1962).
3.38. Yona Friedman, *Paris Spatial* (c.1964-5).
3.39. Yona Friedman, detail of a wire model (c. 1963).
3.40. Yona Friedman, *Paris Spatial* (c.1959-63).
3.41. Yona Friedman, *Paris Spatial* (c.1959-63).
3.42. Yona Friedman, *Paris Spatial* (c.1959-63); detail of model.
3.43. Yona Friedman, *Paris Spatial* (c.1959-63); plan showing distribution of masses.
3.44. Yona Friedman, rendering of a Spatial City (n.d.).
3.45. Yona Friedman, *Paris Spatial* (c.1959-63); photomontage.
3.46. Yona Friedman, *Paris Spatial* (c.1959-63); photomontage.
3.47. Yona Friedman, *Paris Spatial* (c.1959-63); photomontage.
3.48. Yona Friedman, *Paris Spatial* (c.1959-63); photomontage.
3.49. Yona Friedman, *Gare St. Lazare* project (1964); Batignolles area.
3.50. Yona Friedman, *Gare St. Lazare* project (1964); Batignolles area.
3.51. Yona Friedman, *Gare St. Lazare* project (1964); Batignolles area.
3.52. Yona Friedman, *Gare St. Lazare* project (1964); Batignolles area.
3.53. Yona Friedman, circulation plan for Paris (c. 1970).
3.54. Yona Friedman, "*Proposition pratique no. 2*" (n.d.)
3.55. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961)
3.56. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961)
3.57. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961); computer banks.
3.58. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961); the so-called "*cellule de l'indifference.*"
3.59. *La tour lumière cybernétique*, project for *La Défense* (1965-73); model showing site.
3.60. *La tour lumière cybernétique* (1973).
3.61. *La tour lumière cybernétique*, project for *La Défense* (1965-73); section.
3.62. *La tour lumière cybernétique*, project for *La Défense* (1965-73); computer control center.
3.63. Nicolas Schöffer, *Control Center for a Cybernetic City.*
3.64. Nicolas Schöffer, *Sexual Leisure Center*, project for the Cybernetic City (c. 1965).

Chapter 4

4.1. Buckminster Fuller, *Geodesic Dome over Mid-town Manhattan*, project (1962).
4.2. *The Mero System* (1943).
4.3. Pollack and Waterkeyn, *Atomium*, Brussels (1958).
4.4. Konrad Wachsmann, *Structural System for Large Hangars* (1950-53); model.

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4.5. Konrad Wachsmann, *Structural System for Large Hangars* (1950-53); node prototype.
4.6. Kanrad Wachsmann, *Structural Study* (1953).
4.7. Guillaume Gillet and René Sarger, eng., *French Pavilion*, Brussels (1958).
4.8. Guillaume Gillet and René Sarger, eng., *French Pavilion*, Brussels (1958); interior view of the central support for the "mast."
4.9. Aerial view of Montreal Expo '67, with the *Man the Producer* pavilion in the center.
4.10. Affleck, et al., *Man the Producer* pavilion at Expo '67, Montreal (1967), interior view under construction.
4.11. Kenny, et al, *Gyrotron*, Montreal (1967); view.
4.12. Kenny, et al, *Gyrotron*, Montreal (1967); elevation.
4.13. Robert le Ricolais about 1960.
4.14. Relations of various polyhedra via topological operations: Truncation, Stellation, and Duality; from Marc Mimram, *Structures et formes*.
4.15. Robert le Ricolais, *Starhex* (r) and *Trihex* (l) dome systems (c. 1966).
4.16. Robert le Ricolais,structural model (c. 1960).
4.17. Robert le Ricolais, "monkey saddle" structure with weights attached.
4.18. Ernst Haeckl, "Radiolaria," From *Voyage of the H.M.S. Challenger*.
4.19. Ernst Haeckl, "Radiolaria," From *Voyage of the H.M.S. Challenger*.
4.20. Photo of bone structure as used by Le Ricolais.
4.21. Page from Marc Gaillard, "*Plaidoyer pour les chercheurs*," in *Urbanisme* no.92 (1966), showing bone structure images.
4.22. Robert le Ricolais, diagram comparing *Trihex* circulation system to the traditional orthogonal grid (1969)
4.23. René Sarger, project for a "bridge city" over the *Péripherique* (c. 1973).
4.24. David G. Emmerich, Tensegrity model with wood and chain (c. 1966).
4.25.David G. Emmerich, *Agglomeration underneath a stereometric dome* (c. 1968).
4.26. David G. Emmerich, *Construction Games* (c. 1968); structural and combinatory principles.
4.27. David G. Emmerich, *Construction Games* (c. 1968); Plan and model of cells stacked underneath a structural dome.
4.28. Eckhard Schulz-Fielitz, polyhedral and grid studies; models (c. 1961).
4.29. Eckhard Schulz-Fielitz, study for an urban agglomeration (c. 1964); model.
4.30. Eckhard Schulz-Fielitz, study for an urban agglomeration, suitable for construction on uneven ground (c. 1964); model.
4.31. Eckhard Schulze-Fielitz, *Spatial City* (c. 1960); model.
4.32. Eckhard Schulze-Fielitz, *Spatial City* (c. 1960); model.
4.33. Nicolas Schöffer, *The Five Topologies* (c. 1964).
4.34. Members of the GEAM, left to right: Ruhnau, Günschel,Friedman, Frieden, Emmerich (c. 1958).
4.35. Yona Friedman, *L'architecture mobile* (1958).
4.36. Gunther Günschel, various projects as published in *L'architecture d'aujourd'hui*, vol. 28 (1957).
4.37. Yona Friedman, schematic drawing illustrating Friedman's notion of "comprehensive systems" (c. 1964).
4.38. Guy Rottier, *Flying Vacation House* (1964).

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4.39. Pascal Hausermann, *Perspective of a Quarter* (c. 1960).
4.40. From: Joffre Dumazedier and Maurice Imbert, *Espace et loisir* (1967).
4.41. Claude Parent and Paul Virilio, *Church of St. Bernadette*, Nevers (1964-66); photo Larry Busbea.
4.42. Claude Parent, *Turbosite* (1963).
4.43. Parent and Virilio, *Vague* [wave] (1966).
4.44. Paul Virilio, *Look-out on the Atlantic* (1958).
4.45. Claude Parent and Paul Virilio, *Church of St. Bernadette*, Nevers (1964-66); section.
4.46. Paul Virilio, *Function of the Oblique* (1966).
4.47. Paul Virilio, *Habitable Circulation* (1966).
4.48. Parent and Virilio, "Topotonique" (1967).
4.49. Claude Parent and André Bloc, *Urbaina* project for a car (1962); model.
4.50. Nicolas and Eléanor Schöffer in *Scam I* (1972).
4.51. Nicolas Schöffer, *Scam I* (1972); rendering.
4.52. D.G. Emmerich, *Deltamobiles* (1966).

Chapter 5

5.1. Nicolas Schöffer, *La ville Cybernétique* (1969)
5.2. View of Schöffer's studio with various cybernetic sculptures illuminated.
5.3. Nicolas Schöffer, *Prisme* (1964).
5.4. Nicolas Schöffer, *Le Lumino* (1958-1968).
5.5. "Power and Information," From Henri Van Lier, "Architecture Synergique," (1968).
5.6. From Abraham Moles, *Théorie des objets.*
5.7. Yona Friedman, competition entry for the Centre George Pompidou (1970).
5.8. Chanéac, Competition Entry for the Centre George Pompidou (1970).
5.9. Nicolas Schöffer, Competition Entry for the Centre George Pompidou (1970).

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Chapter 1:
Introduction

On the first day of the second week, the outline of the situation is therefore as follows. The architects and the provisional administration have concluded an agreement to realize, in the historic center itself, an immense *cité des plaisirs*.

Alain Robbe-Grillet, *Topologie d'une cité fantôme* (1976)[1]

I know a guy in Paris who can make fantastic dreams come true: taking the world for some kind of garden, you draw a whole future city in the sky; you reduce all the complex function of a city into a ready-made form. It may have some scenic value, but the danger of such an exhibit lies probably in its seductive power, the fascination with image for its own sake, based on some uncritical attitude or a desire for publicity.

G. Robert Le Ricolais (1973)[2]

Paris, May 1965; during a period of unparalleled public and academic debate about the technology, ideology and aesthetics of urban space, the newly-formed *Groupe International d'Architecture Prospective* (GIAP) issued the following manifesto [Fig. 1.1]:

> The demographic explosion, the spectacular acceleration of technological and scientific progress, the constant augmentation of standards of living, the socialization of time, of space, and of art, the increased importance of leisure, the importance of factors of time and speed in ideas of communication, have shattered the traditional structures of society. Our cities, our regions can no longer adapt to these transformations. It is becoming urgent to foresee and to organize the future in order to avoid suffering.
>
> The GIAP's goal is to unite the following: technicians, artists, sociologists and diverse specialists who research new urban and architectural solutions.
>
> The GIAP seeks to be a link between researchers from all countries, even if their theses are sometimes opposed to our own. For the moment, therefore, the GIAP does not have any other doctrine than the architectural Prospective.

---

[1] Alain Robbe-Grillet, *Topologie d'une cité fantôme* (Paris: Minuit, 1976), 93.

[2] G. Robert Le Ricolais, "Things Themselves are Lying and so are Their Images," *Via* 2 (1973), 101.

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Against a retrospective architecture. For a Prospective architecture.[3]

The statement was signed by Yona Friedman, Walter Jonas, Paul Maymont, Georges Patrix, Michel Ragon, Ionel Schein, and Nicolas Schöffer. GIAP was active until 1970; it expanded membership, held 20 symposia between 1965 and 1967, and published an important series of books in conjunction with the Belgian *Centre d'Etude Architecturale*, most of which were monographs on or by GIAP members.[4] GIAP's *avant la lettre* interdisciplinarity was striking. The initial membership roster included architects, engineers, urbanists, artists, photographers, sociologists, a biologist, as well as critics and theorists (some of these included the architectural team of Jean-Jacques Fernier and André Biro, the sculptor Mathias Göeritz, the art critic Pierre Restany, and the sociologists Jean Fourastié and Abraham Moles).

The works produced by GIAP members, and addressed in their symposia and publications were, with few exceptions, un-built (and mostly un-buildable) projects and proposals for ideal or future architectural and urban spaces. Considered by Reyner Banham to be proto-megastructures, these works often comprised vast futuristic

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[3] The manifesto was printed on individual flyers (Paris, 1965), and is reprinted in Michel Ragon. *Prospective et futurologie*: *Histoire mondiale de l'architecture et de urbanisme modernes*, vol. 3 (Paris: Casterman, 1986), 341-2. *Prospective et Futurologie* is Ragon's inclusive survey of this period. He publishes many documents detailing the history of the production of individuals and groups involved in research architecture of the 1950s and 60s. It is by far the most comprehensive source on the material.

[4] I cite only those numbers that issued from the GIAP collaboration, or have some direct connection to it: René Sarger, "Structures nouvelles," *Cahiers du CEA*, no. 1 (1967); Stéphane du Château, "Structures spatiales," *Cahiers du CEA*, no. 2 (1967); Yona Friedman, "L'architecture mobile; suivi de la théorie des systèmes compréhensibles," *Cahiers du CEA*, no. 3, part 1 of 2 (1968); Yona Friedman, "La théorie des mécanismes urbaines," *Cahiers du CEA*, no. 3, part 2 of 2 (1968); Henri van Lier, "Architecture synergique," *Cahiers du CEA*, no. 4 (1968); Yona Friedman, "La planification urbaine," *Cahiers du CEA*, no. 6 (1969); Guy Rottier, "Recherches architecturales," *Cahiers du CEA*, no. 8 (1972).

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infrastructures supporting diverse architectural and urban functions.[5] Thus, they can be classified among the vast body of post-World War II utopias that defined themselves with varying degrees of ambivalence and antagonism against the "heroic period" of modern architecture and the social fallout of urban functionalism employed during reconstruction. More generally, the terminology employed for these paper projects included "visionary," "research," "fantastic," "experimental" architecture, etc.

Besides the phrase "Prospective architecture" utilized by Ragon, the only other, and more common, blanket term for this work that emerged specifically from the French context in these years is "*urbanisme spatial*," which was also a coinage of Ragon's. Both characterizations are helpful; the former indicates the forward-looking technological aspect of many of the proposals, and the latter alludes to their adherence to the conviction that a re-structuring of space itself on an urban scale could effect or reflect some form of social change.

Even though they were often grouped together (even before the formation of the GIAP), these works displayed a marked stylistic, technical, and theoretical diversity. Prefabricated structures such as the vast space frames proposed by the engineer Robert Le Ricolais [Fig. 1.2] would seem to have little in common, for instance, with the biomorphic, sculptural architectural forms designed by the artist Pierre Szekely [Fig. 1.3], or the portable, prefabricated plastic houses of Ionel Schein [Fig. 1.4]. The first roster of symposia sponsored by GIAP (held at the Musée des Arts Décoratifs on most Tuesdays between December 2, 1965 and March 24, 1966) displays this diversity, but also hints at the shared concerns that united these works: "New Architectural Technology," "Mobile

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[5] Reyner Banham, *Megastructure: Urban Futures of the Recent Past* (New York: Harper & Row, 1976), 57-64.

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Architecture," "Urbanism and Cybernetics," "Coloring in Urbanism and Architecture-Sculpture," "Underground Urbanism," "Spatial Structures," etc..[6]

This dissertation seeks to document and contextualize a specific period and a specific tendency in French architectural and urban production: the tendency loosely referred to as Spatial Urbanism in 1960s France. The GIAP forms a perfect framework for such a study, because so many important individuals were associated with it, and because its projects, publications, and other activities helped to define architectural, urban, and social debates at this time in ways that have not been acknowledged. This is not, however, a complete chronology or documentation of the GIAP, nor is it a comprehensive catalogue of the works of its participants. Rather, I have used the group, and ideas generated by it as a structuring device for my discussion of French utopian design during the period in question.

Such a structuring device has proved necessary because the object of my analysis is neither static, nor absolutely concrete. It is a kind of composite image of an ideal, "Spatial" city that developed during a complex period in France of material plenitude and social upheaval. Sometimes we find vague but compelling descriptions of this composite image in the writings of critics and artists like Michel Ragon, Pierre Restany, Henri van Lier, Abraham Moles, Nicolas Schöffer, and Victor Vasarely, but most often, our most tangible evidence of this phantom city is a large selection of architectural drawings and models by various architects and artists. From this vast and often contradictory body of

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[6] Printed flyer (Paris, 1965), archives of Nicolas Schöffer (GIAP folder). Schöffer's papers are currently being catalogued by Madame Eléanor Schöffer; I thank her for granting me access to pertinent materials.

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evidence, it is possible to reconstruct the image and idea of a luminous city that was to float above the earth, all of its parts (and inhabitants) circulating in a smooth, synchronous rhythm [Fig. 1.5]. Automation technology would ensure that material needs were attended to, orchestrate the movements of the city, and provide an abundance of leisure time for its citizen/participants. Rectilinear and polyhedral structures and towers would support biomorphic living cells [Fig. 1.6] and the streets and buildings themselves would constitute a gigantic work of plastic art [Fig. 1.7]. Color, light, and sound would all be synthesized in this urban space into a single, constantly changing spectacle [Fig. 1.8].

This image of a possible, future city was both radical and somehow pastoral. It was rational, yet picturesque. It was liberating yet technocratic. One senses that the projects, essays, and polemics that animated this idea of the city during the sixties had some profound spiritual or cultural link to Paul Valéry's dictum that "the greatest liberty is born of the greatest rigor." I have hypostasized this entity of the Spatial City in order to bring some sense of coherence to these various paradoxes, or at least to provide them with a common arena in which they can dialectically play themselves out. It is nice to have, at least rhetorically, some steady center from which to make observations about a period defined by rapid progression and radical upheaval—even if, in the end, this coherent image will itself have to be dismantled into its various formal and conceptual components.

The idea of the city as propagated by the GIAP was of a meeting ground or a space of synthesis for the very paradoxes described above. As such, it betrayed its adherence to a modernist, rationalist, technologist paradigm whose days were numbered

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in both social and architectural discourse in the mid to late sixties. The French context was of course especially intense as regards the rejection of this paradigm. Architecture and urbanism were central to these developments. France hosted perhaps the greatest institutionalization of modern architecture anywhere in the world (i.e. the government adoption of the style for public projects), and accordingly, the strongest social reaction against this institutionalization. This social reaction, galvanized in May of 1968, would have a critical if somewhat uncertain impact on all architectural practice in France. It also signaled the twilight of the modernist utopia, not only in France, but also around the world.

Accordingly, this dissertation tells a two-part story. One of these parts recounts the formation and development of a particular avant-garde and the projects and ideas that it comprised. The second part describes the external or contextual vicissitudes of the society in which this avant-garde practiced. It is obviously impossible to fully separate these two aspects of the study. And nor would such an operation be desirable, in so far as it is the intensity of the context that lends these projects their historical interest and importance. The following chapters will treat this material in successive layers: the development of "Spatial Urbanism" in post-World War II architectural discourse and the French context (Chapter 1), Michel Ragon's formation of the GIAP and the ideological status of utopian design in Paris in the sixties (Chapter 2), its specific relevance in the context of the French urban debates of the sixties (Chapter 3), its predominant formal and thematic manifestations (Chapter 4), and finally its significance relative to contemporaneous intellectual and cultural developments (Chapter 5).

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In all of these chapters, the composite image of the Spatial City will be viewed as a liminal entity, trapped by and defined by the very "Valérian" paradoxes it attempted to embrace. In order to better describe the workings of these contradictory dynamics, I have chosen to employ the term "topology," which was, among other things, very much in vogue with designers and theorists at this time. The most practical definition of topology refers to a set of geometrical operations that define complex figures that are subject to morphological change, even though they remain constant in the relation of their parts. The most well known topological figures are various polyhedra, the Möbius Strip, and the Klein Bottle[fig. 1.9]. For the architects and urbanists discussed here, this concept functioned as a model of the synthesis of aesthetics and science, as well as the ideal way to express diversity and change within a rational and regular structure. On an even more conceptual level, the idea of topology was as a mediating figure—a set of relations (or a structure) that established the distance between or the syntax of various elements, be they units in a grammatical system, or a person placed within an urban network.

I will give an historical account of the use of the term topology, but I will also use it for my own methodological purposes. It is the idea of topology that will best serve to describe the paradoxical nature of the Spatial City described above. By utilizing the topological model, it is possible to transcend the notion of dialectical contradiction (thesis + antithesis = synthesis), at least for a moment, and view the dichotomies inherent to French utopianism at this time, not as conceptual stalemates that invalidate the project of Spatial Urbanism, but as elements in a dynamic structural relation to one another, whose inherent contradictoriness animated that structure. In other words, Spatial Urbanism used topology to attempt to create a space that might contain (but not destroy) the dangerous

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crosscurrents of modernity itself—the conflict between self and system, rationality and freedom, expressionism and production, the local and the global, etc., and topology is, in the end, the only way to understand the often baffling propositions of so many French designers during the sixties.

Periodization and Method

"Visionary" or experimental utopias were, of course an international phenomenon during the sixties. They were, and have come to be seen historically, as symptoms of a shifting set of values within architectural discourse (social transformation, and the role of technology, etc.). As such, historical considerations have tended to group these works together, in order to make generalized assertions about their historical and theoretical significance. Within this overly-generalized, but hardly inaccurate conception, the techno-sublime images of the 1960s—walking cities, endless cities, nomadic, and otherwise over-determined landscapes—have been posited as a more or less uniform or blanket response on the part of an "angry" younger generation to the old modernist visions (both functionalist and aesthetic) and to existence in a "post-industrial" society.

This historiographic tendency was especially in evidence in the mid-1990s, and especially at the Venice Architecture Biennale of 1996, which comprised a large group of nationally-defined sections, each historically and curatorially reassessing the legacy of the 1960s, within and beyond their respective borders.[7] What emerged from these

[7] The Biennale was organized overall by Hans Hollein, and produced the following catalogues: *Visionary Architecture in Austria in the Sixties and Seventies: Inspirations, influences, parallels* (Klagenfurt, Austria: Ritter, 1996). Gianni Pattena, *Radicals: Design and Architecture 1960/1975* (Florence: Il Ventilabro, 1996). The French contribution comprised a separate exhibition that was markedly different and moreover, defined by its curator, Frédéric

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exhibitions, and their catalogues, was a fairly well defined picture of a European avant-garde, poised between the inter-war heroic period of modernist purity, and the "contemporary," technologically "impure," postmodern world of architectural signs, signification, and historical self-awareness. This Biennale presented the image of the sixties as a critical turning point, a transitional period in which social upheaval and student disaffection contributed to a fundamental paradigm shift that began in 1968, and reached its "postmodern" fruition sometime in the mid seventies.

At a certain level, this model seems absolutely valid, and this dissertation will not attempt to question the assertion that the decade of the sixties was ambivalent and pivotal. However, I will question the assertion that this ambivalence arose solely from the rebellious minds and drafting boards of young revolutionaries. It is clear that the current revival in historical assessments of this period of architectural history has overwhelmingly resulted in attempts to recuperate the radical or progressive status of various projects, which was banished into a critical purgatory after 1968 by architectural critics like Manfredo Tafuri and Colin Rowe.[8] These new histories of the 1950s and sixties are thus largely celebrations of the forgotten critical potential of "heterotopias."[9] In other words, they claim that the era of bureaucracy and technocracy produced violent

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Migayrou, in totally formalistic terms, see Frederic Migayrou, *Bloc: le monolithe fracturé* (Orléans: Éditions HYX, 1996).

[8] See, for instance, Manfredo Tafuri, *Progetto e utopia* (Bari: Guis, Laterza & Figli, 1973). Trans. Barbara Luigia la Penta as *Architecture and Utopia* (Cambridge: MIT Press, 1976), 125-149; Colin Rowe and Fred Koetter, *Collage City* (Cambridge: MIT Press, 1978), 34-43. It should be noted that I am employing the date of 1968 as an emblem of the beginning of the cultural concerns discussed here, and not necessarily as the strict historical beginning of them.

[9] The term "heterotopia" is taken from Michel Foucault's important paper delivered at the Centre d'études architecturale in Paris in 1967: "Of Other Spaces: Utopias and Heterotopias," trans. Jay Miskowiec, in Joan Ockman, ed. *Architecture Culture 1943-1968* (New York: Columbia Books of Architecture and Rizzoli, 1993, 1996 reprint cited), 420-426.

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reactions in the form of urban visions that subverted the technological and ideological foundations of State and corporate planification. One significant symptom of this critical reassessment is the attempt to revise or refute Tafuri's and Bürger's damning appraisals of the postwar avant-gardes.[10]

It would be disingenuous not to acknowledge this dissertation as part of the current revival of interest in the architecture and design of the 1960s, and of postwar modernism more generally. This revival includes a double interest in both the social pragmatism of many important postwar movements like the New Brutalism, alongside growing attention paid to the category of the "visionary."[11] In fact, the latter tendency has seemed pertinent recently in relation to the competition projects for the reconstruction of the World Trade Center site.[12] Unlike many of these discussions, I do not view

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[10] See, for instance, Felcity Scott, "Architecture or Techno-Utopia," *Grey Room*, no. 3 (Spring, 2001): 112-126; David Cunningham, "Architecture, Utopia and the Futures of the Avant-garde," *The Journal of Architecture* 6, no. 2 (Summer, 2001): 169-182.

[11] Apparently inspired by Joan Ockman's seminal collection of writings for the postwar period, *Architecture Culture*, a slew of studies have appeared: Sarah Williams Goldhagen and Réjean Legault, eds., *Anxious Modernisms: Experimentation in Postwar Architectural Culture* (Cambridge and Montréal, MIT Press and the CCA, 2000), Catherine de Zegher and Mark Wigley, eds., *The Activist Drawing: Retracing Situationist Architectures from Constant's New Babylon to Beyond* (Cambridge and New York: MIT Press and the Drawing Center, 2001), *The Changing of the Avant-garde: Visionary Architectural Drawings form the Howard Gilman Collection*, exhibition catalogue (New York: Museum of Modern Art, 2002). Also, journals such as *Grey Room* and the Royal Institute of British Architecture's *The Journal of Architecture* have displayed editorial interest in the visionary architecture of the postwar period (pertinent articles cited below).

[12] The *New York Times* architecture critic, Herbert Muschamp made this connection explicit in his review of *The Changing of the Avant-garde*, where he bemoans the lack of "institutional support" of visionary architecture in the realm of reality by the Museum of Modern Art. Specifically, he decries the first proposal issued by the port authority in 2002 (his comments were made prior to the second round of entries); Herbert Muschamp, "Castles in the Air Adorn Cities on Paper," *The New York Times* (October 25, 2002): E31, E33. When the contemporary "visionaries" of architecture did submit their proposals in late 2002, it was not surprising to see them invoke the rhetoric of the 1960s. Greg Lynn's team talked about a vast "city in the sky," and others invoked such tired phrases as "city of tomorrow."

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"visionary" architecture as the necessary poetic subconscious or conscience of modernism. I treat it here as a historical reality that had specific and definable impacts on architectural and urban practice and theory during the 1960s.

In other words, utopia was not always inverted into its heterotopian double during the sixties, and at least for a moment, in a specific context, the goals of the post-industrial society of administration and exchange, and avant-garde aesthetic concerns seemed *not* to be at odds. This is the context that concerns us here. These concerns were of course not exclusive to the French context. For example, GIAP's membership was not limited to France (non-French participants included the Swiss designer of biomorphic capsule houses, Pascal Häusermann [Fig.1.10], the English advocate of plastics, Arthur Quarmby [Fig. 1.6], and the German architect, Frei Otto [Fig. 1.11], the German-born sculptor Mathias Goeritz [Fig. 1.12], etc.). Furthermore, virtually every European country, Asia, and the United States hosted individuals and organized groups who were also engaged in the post-war trend of speculation on the urban future and the production of utopic or heterotopic spaces. The most famous of these—the British group Archigram [Figure 1.13], the Japanese Metabolists [Figure 1.14], the Italian groups Archizoom and Superstudio [Figure 1.15], the Austrian architect Hans Hollein, etc.—are in fact much better known than their French counterparts.

Why, then, focus on this phenomenon from a nationally-defined point of view? In fact, it is precisely the exigencies of the local context—French avant-garde discourse, and construction and urban planning—that give the projects of Spatial Urbanism their historical significance. Furthermore, these same exigencies account for the clear differences between French utopian production during the 1960s relative to projects and

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theories issuing from other countries. In brief, for the French designers and those associated with them, one notes the persistence of a total faith in technology's ability to enhance the quality of life, the continued assertion of the idea of the synthesis of the arts, and a profound failure to establish a critical (or even ironic) relationship to the relatively newly defined culture of consumerism. While designers in Austria, Italy, Great Britain, and the United States were increasingly utilizing pop imagery, incorporating Marxist critique, and developing the performative aspects of their designs towards the Happening, the French contingent was continuing to refine its sociological methodology, its understanding of geometrical and mathematical applications and other sciences such as information theory. In other words, the French were content to continue to seek an integration of design issues, while other avant-gardes groups were busy differentiating themselves from an architectural mainstream that they perceived as being absorbed by society's dominant government and private institutions.

My approach to this material is social-historical, and thus relies upon the establishment of a set of ideas and concerns from the political and cultural realms that are directly or indirectly related to architectural production. In establishing the elements of this periodization, I have been guided by several sources (in addition to the many general histories of the period that are available): Frederic Jameson's important essay, "Periodizing the 60s," several of Susan Sontag's essays written at the time, and the recent book by Kristin Ross, *Fast Cars, Clean Bodies: Decolonization and the Reordering of French Culture*.[13] But most of all, I have tried to draw on primary sources to establish

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[13] Frederic Jameson, "Periodizing the 60s," in vol. I of II, *The Ideologies of Theory: Essays, 1971-1986* (Minneapolis: University of Minnesota Press, 1988), 178-208; Kristin Ross, *Fast Cars, Clean Bodies: Decolonization and the Reordering of French Culture* (Cambridge, MIT Press, 1995).

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the set of contextual themes which concern me here. I have allowed my research to be guided by the writings of the architects, artists, and critics who are the subject of the study. In doing this, I hope to establish a more accurate sense of the ways in which diverse ideas from other disciplines were incorporated into architectural and urban discourse in France at this time.

The sum of these sources has led me to situate the utopian architecture and urbanism of this period within a set of significant relations among the cultural, scientific, and aesthetic realms. From the cultural realm, these include the discourse on leisure and culture that was ultimately derived from the ideology of the Popular Front from 1936 on, speculations about the impact of industrial automation on everyday life, warnings of catastrophic global population increase, and growing political unrest from domestic revolt to decolonization. The social sciences were also very important during this period, and I will particularly be interested in the significance of sociological studies relative to architectural thought, as well as other intellectual trends, such as Structuralism and semiotics, and the more radical theories of the philosopher Henri Lefebvre, and Guy Debord and the Situationist International. In attempting to characterize the artistic context of urban thought at this moment, I will enlist contemporaneous developments in literature, film, and the visual arts.

I do not wish to give the impression that this vast field of interdisciplinary concerns was absolutely coherent, or that the urban discourse with which I am concerned was in perfect alignment with all, or any of these contemporaneous developments. Sometimes, parallels and analogies are apparent and are thus helpful as descriptive tools, but almost as often the divergences and tensions between these elements are equally as

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useful. Additionally, I will not always be able, because of logistical constraints, to evoke all of these different elements as fully as others. My main goal is to capture and trace developments within the disciplines of architecture, urbanism, and to a lesser extent, art, and so my analyses of the sociological, literary, and political contexts, for instance, will be of a supplementary nature.

In the end, I hope that my contextual references will serve to establish the central place of the avant-garde within the context of what Ross describes as the "unusual swiftness of French postwar modernization."[14] For it is precisely on the topic of the avant-garde that my approach diverges significantly from that of Ross. Ross seems totally uninterested in the French avant-garde (and here she includes the theories and novels of Robbe-Grillet, Structuralism, and the Annales school of historiography) in the postwar period because it "is complicitous with the workings of capitalist modernization."[15] Her point is convincing, and so too is Ross's general conclusion that the avant-garde therefore cannot offer any critical model or perspective on the period in question, even though we could offer some exceptional counter examples from the fields of art and architecture, which Ross neglects. But, instead of refuting this claim, and instead of turning to the "realist" response (as found in the novels of Rochefort, Perec, de Beauvoir, and the films of Tati, Godard, etc.) as Ross does, I want to dwell on this complicity as it manifests in the urban realm.

To do so is not to condone the activities of what can best be described as a Gaullist avant-garde, but rather to acknowledge its historical interest as not being totally

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[14] Ross, *Fast Cars, Clean Bodies*, 4.

[15] Ross, *Fast Cars, Clean Bodies*, 13.

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negated by its lack of self-reflexive criticality. This brings us back to the issue of methodology, because it seems obvious that a simple social history is not adequate to the task at hand. It is not enough to simply juxtapose, for instance, an architectural project and a sociological treatise, and draw conclusions from their obvious similarities. Having accepted the complicity, to continue to use Ross's terminology, of avant-garde modernism in the development of the post-industrial society of spectacle in France,[16] we cannot then simply suspend all judgment of it indefinitely. On the other hand, to reject the avant-garde in this period outright is, in some ways, to be naïve enough to be convinced by their claims and ambitions to formal objectivity. In other words, the will to technological integration via formal objectivity is certainly present in Spatial Urbanism, and I will discuss this at length, but the specific workings of how this integration was to be achieved in real space and time were far from coherent, and in this sense, the theories of the architects and critics involved were far from "successful."

The question of how we might construct a critical approach to this material, while still seeking to do justice to its avant-garde ambitions has received at least a partial answer. In a 1976 essay, Frederic Jameson outlines an analogous project. In reviewing Jacques Leenhardt's exhaustive reading of Alain Robbe-Grillet's *La Jalousie* (1957),[17] Jameson recognizes a convergence of sorts between what he terms Franco-Italian Structuralism, and the critical theory characteristic of the Frankfurt School. He suggests that Robbe-Grillet's objective *nouveau roman* might provide "some field or object over

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[16] By invoking the term "spectacle" I am alluding to: Guy Debord, *Society of the Spectacle*, trans. Donald Nicholson-Smith (New York: Zone Books, 1994).

[17] Jacques Leenhardt, *Lecture politique du roman: La jalousie d'Alain Robbe-Grillet* (Paris: Minuit, 1972).

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which these two 'methods' can meet in such a way that their respective explanatory powers can be concretely compared."[18] For Jameson, Leenhardt's attempt to demonstrate that Robbe-Grillet's formal objectivity was structurally linked to the politics of colonialism did not constitute an absolute rejection of the author's (Robbe-Grillet's) intentions, rather a "transcendence of the inner, formal experience of the work or of the signifier by a study of its material and referential *preconditions*."[19]

Thus, for Jameson, the opposed forces of semiotics and critical theory are balanced (albeit precariously) in Leenhardt's study. Though the terms of Jameson's analysis cannot be transposed exactly to my research, I have attempted to approach the material from both of these very historically-specific perspectives, the critical and formal, all the while with the understanding that these terms themselves were in many ways shaped by the very historical forces that I am analyzing.

In the end, I believe it is *because* of the technological *geist* of the French avant-garde during the sixties that these projects are worthy of study, and not despite it. After all, the influence of the French postwar avant-garde was widely felt, and the potentials of a new aesthetic practice based upon technology, Structuralism, and the logic of administration had occurred to others as well. The best example of this trend outside the French context is the writings of Susan Sontag from the sixties and seventies. Sontag was, after all, one of the great American commentators on French art and culture at this time. Furthermore, it is clear that she recognized a stronger indication of what she called

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[18] Frederic Jameson, "Modernism and its Repressed; or, Robbe-Grillet as Anti-Colonialist," *Diacritics* 6, no. 2 (Summer 1976): 7; reprinted in *The Ideologies of Theory: Essays, 1971-1986*, vol. 1 (Minneapolis: University of Minnesota Press, 1988), 167-185.

[19] Jameson, "Modernism and its Repressed," 8.

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the "new sensibility" in France than in the United States. This new sensibility involved the synthesis of aesthetics and objectivity, or of what C.P. Snow had characterized as the "two cultures."[20] For Sontag:

> The conflict between the 'two cultures' is in fact an illusion, a temporary phenomenon born of a period of profound and bewildering historical change. What we are witnessing is not so much a conflict of cultures as the creation of a new (potentially unitary) kind of sensibility. This new sensibility is rooted, as it must be, in our experience, experiences which are new in the history of humanity—in extreme social and physical mobility; in the crowdedness of the human scene (both people and material commodities multiplying at a dizzying rate); in the availability of new sensations such as speed (physical speed, as in airplane travel; speed of images, as in the cinema); and in the pan-cultural perspective on the arts that is possible through the mass reproduction of art objects.[21]

In order to define this new sensibility, Sontag drew upon a surprising and fascinating diversity of sources:

> This new establishment includes certain painters, sculptors, architects, social planners, film-makers, TV technicians, neurologists, musicians, electronics engineers, dancers, philosophers, and sociologists.[...] Some of the basic texts for this new cultural alignment are to be found in the writings of Nietzsche, Wittgenstein, Antonin Artaud, C.S. Sherrington, Buckminster Fuller, Marshal McLuhan, John Cage, André Breton, Roland Barthes, Claude Lévi-Strauss, Siegfried Gidieon, Norman O. Brown, and Gyorgy Kepes.[22]

This list of authors and vocations presents a deceptively complicated sketch of what Sontag's "new sensibility" might be. In it, she evokes most of the major themes of twentieth-century avant-gardes—the wresting of the human psychological and historical unconscious (post-humanism), the systematic exploration of the nature of form (over and above subjective perception), the adoption of popular culture as a valid theme, modern linguistics as an exemplary model for cultural criticism, and the synthesis of art and

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[20] C.P. Snow, *The Two Cultures* (Cambridge, Eng.: Cambridge UP, 1959).

[21] Susan Sontag, "One Culture and the New Sensibility,' *Against Interpretation* (New York, Doubleday: 1990), 296. This article originally appeared in 1965 in *Mademoiselle*.

[22] Sontag, "One Culture," 298.

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science. Were we to visualize what this abstract and apolitical sensibility might produce, we might see (as Sontag does) the shaped canvases of Stella, the glass and steel structures of Mies van der Rohe and the films of Jean-Luc Godard.

We might also see (although Sontag was apparently unaware of them) the Spatial Cities produced by Friedman, Maymont, Schöffer, et al. in Paris between 1960 and 1970. In these, the concerns and exemplars catalogued by Sontag find their spatial expression in the social realm. Indeed, Sontag's vision of the function of the new artist of the "new sensibility" as "programming sensations"[23] finds a close parallel in Pierre Restany's prediction that the artist will soon abandon "his ambiguous role as marginal adventurer and independent 'producer' [and that] the artist will thus be prepared for his supreme function in the society of tomorrow: the organization of leisure."[24]

While Ross, Sontag and Jameson constitute my own methodological points of reference, their work needs to be situated within the larger context of sixties and seventies theoretical concerns. Ross's historical critique of Structuralism and French modernization is so important because it incorporates considerations of colonial ideology. However, a more general critique of Structuralism and its ideological connections to bureaucracy developed almost as soon as the new social science appeared. Many classic works in this vein were produced by French writers like Alain Tourraine, Edgar Morin, Henri Lefebvre, and others.[25] I discuss this discourse in greater detail in Chapter 3, but

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[23] Sontag, "One Culture," 302.

[24] Pierre Restany, *Superlund* (Lund: Lunds Konsthall, 1967), 38.

[25] See, for instance, Alain Tourraine, *La société post-industrielle* (Paris: Denoël, 1969), Edgar Morin, *L'esprit du temps* (Paris: Grasset, 1962), Henri Lefebvre, *Au delà du structuralisme* (Paris: Anthropos, 1971), and of course Lefebvre's *Critique de la vie quotidienne*, 3 vols. (paris:

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suffice it to say here that Ross's study is in part based upon earlier, French work.[26] Interestingly, although Sontag was heavily influenced by Roland Barthes and Lévi-Strauss (see below for a more complete discussion of "French theory"), she remained more committed to a modernist aesthetic practice than her French forebears. It is for this reason that her declarations about a new aesthetic mentality and a new synthetic culture seem almost more appropriate to the French context than those of her French "teachers."

Neo-Avant-garde

Though they operated in a typically avant-garde mode (forming a group, issuing statements and publications, inspiring in-fighting, etc.) GIAP and those associated with the "tendency" of Spatial Urbanism defined themselves as participants in a mainstream discourse (architecture for the greatest number, urban issues, etc.), and not in opposition to it. They lacked the radical social ambitions of other avant-gardes (past and contemporaneous), and sought moreover to integrate themselves into the vast structures of the French architectural administration. Of course, in a sense, this is always the conundrum of the *architectural* avant-garde, whose success is paradoxically gauged by its absorption into the social and economic infrastructures that it purports to oppose—in other words by its realization in built form, at a scale beyond private patronage.

Arche, 1958 – 1981). These works were among many others that treated technocracy, bureaucracy, and the managerial ethos in French culture more generally.

[26] Ross's work is also not alone as a historical study of the modernization of French culture. See, for instance, Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Cambridge: MIT Press, 1989), Richard Kuisel, *Seducing the French: The Dilemma of Americanization* (Berkeley: University of California Press, 1993). These are, of course, just a selection of the dozens of cultural studies of France in the 1960s that have been published in recent years. But again, Ross's work distinguishes itself by synthesizing economic, intellectual, cultural, and most importantly for me, *urban* concerns.

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But for the French utopianists of the 1960s, the will to realization was more intense than in other contexts. Thus we are faced with the absurdity of GIAP issuing a "manifesto" that purports to have no "program," and that instead tries to tap into the new trend of interdisciplinary teams producing large-scale urban projects. Tafuri and Dal Co referred to these developments as producing a new "academy of the utopian."[27] But instead of constituting grounds for their dismissal from the historical cannon, GIAP's activities, and the many proposals produced by its members, provide a privileged opportunity to analyze the vicissitudes of modern architecture as it approached the critical decade of the 1970s.

Nonetheless, the French context presents the critical historian with a distinct problem: how do we assess a body of work produced by an avant-garde that was not seeking to radically alter its society, but was instead attempting to align itself more closely and more profoundly with the base conditions of that society? For Peter Bürger, the neo-avant-garde offers nothing more than the "false sublation" of art's autonomy, and its attempts to alter everyday praxis are always utterly absorbed by the dominant culture.[28] Subsequently, Bürger's inflexibility in his assessment of postwar artistic and literary production have been questioned. It would be very convenient if we could, as Benjamin Buchloh does, attempt to recover the dialectic of the neo-avant-garde "in which the mutually exclusive forces of artistic production and of the culture industry as its

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[27] They refer to Friedman, Maymont, and Kenzo Tange specifically; Tafuri and Dal Co, *Modern Architecture*, 358

[28] Peter Bürger, *Theory of the Avant-garde*, trans. Michael Shaw (Minneapolis: University of Minnesota Press, 1984), 35-54.

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utmost opposite can still be traced in their perpetual interactions."[29] But even Buchloh draws the line with Pierre Restany, originator of the term *Nouveau Réalisme*, and one of GIAP's resident art critics, describing his writings as being in a state of "mindless acceptance...in which the neo-avant-garde is enthusiastically assigned the role of a cultural claque in the celebration of the new techno-scientific society of consumption, spectacle, and control."[30]

The Italian architectural critic Manfredo Tafuri also engaged in a detailed critique of the neo-avant-gardes of the sixties. Like Buchloh, Tafuri also singled out Restany as an exemplary symptom of the complicity of the neo-avant-garde with institutional, industrial, and market forces.[31] This critique took the form of an unusually lengthy diatribe against a fairly obscure article by Restany, which appeared in 1968 in *Domus*: "Le livre blanc de l'art total: pour une esthétique prospective."[32] For Tafuri, Restany's attempt to formulate a "prospective esthetic" represented the resurrection of a "Marcusian mythology" which "is adopted to demonstrate that only by immersion in the present relationships of production is it possible to achieve the vaguely identified 'collective liberty.'"[33] Indeed, such an immersion, or better, replication, of the rapports of

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[29] Benjamin Buchloh, *Neo-Avantgarde and Cutlure Industry: Essays on European and American Art from 1955 to 1975* (Cambridge: MIT Press, 2000), xxiii.

[30] Benjamin Buchloh, "Plenty or Nothing: From Yves Klein's *Le Vide* to Arman's *Le Plein*," in *Premises: Invested Spaces in Visual Arts, Architecture, & Design from France: 1958-1998* (New York, Guggenheim Museum, 1998), 87.

[31] Manfredo Tafuri, *Architecture and Utopia*, trans. Barbara Luigia La Penta (Cambridge, MIT Press, 1976; 1996 printing cited), 139-142. Tafuri also mentions here Ragon's (Ragon was the editor) *Les visionnaires de l'architecture* (Paris: Robert Laffont, 1965).

[32] Pierre Restany, "Le livre blanc de l'art total: Pour une esthétique prospective," *Domus*, no. 469 (December, 1968): 41-50.

[33] Tafuri, *Architecture and Utopia*, 140.

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production and exchange in the postwar period was one of the key elements of Spatial Urbanism. This is one reason that works by architects such as Yona Friedman and Paul Maymont were received even more harshly than their British, Austrian, and Japanese counterparts, in the ideological fallout of May, 1968.

From Tafuri's and Dal Co's perspective, virtually all of these attempts were of equivalent impotence, insofar as they remained blind to their own ideological underpinnings, but the French designers continued to present irresistible targets:

> The 'new dimension,' to which the means of planning should be attuned, became a recurrent slogan in the great debate of the 1960s. No middle ground, however, was envisaged between that utopian effort to control the dynamic phenomena of urbanization and the concrete administrative measures and means. Neither Tange, or Friedman, or Maymont was disposed to accept the risks that political administration of urban transformations imposes. Quite the contrary, their entire polemic was directed against the experiences—deformed and flattened by their superficial interpretation—of the radical urbanism of the 1920s and 1930s whose political aspect they ignored and whose typological scheme they contested purely in terms of form.[34]

Indeed, various "new dimensions" were proposed by members of GIAP and the Spatial Urbanists, and all of them attempted to re-structure urban space, defined as the dynamic set of relationships established between the public and private realms. Equally, few if any of GIAP's members understood those relationships ideologically.

However, it is incorrect to say that they failed to envisage a "middle ground" between the re-structuring of urban space and its administrative implementation. As this dissertation will demonstrate, the major significance of these works lies precisely in their positing of such a middle ground. This occurs at formal and conceptual levels, and ultimately involves the formulation of urban and architectural spaces according to the

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[34] Manfredo Tafuri and Francesco Dal Co, *Modern Archtiecture*, 360.

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generalized laws of visual abstraction, mathematical or geometrical equations, and administrative information exchange.

Just as the novelist and essayist Alain Robbe-Grillet had called for a "New Novel" adequate to an era characterized by "administrative numbers,"[35] so too the Spatial Urbanists sought an urban fabric that would both recapitulate and enact the logic of the "tertiary era," in which the dirty, heavy production of the industry of the Nineteenth Century had been replaced by the streamlined exchange of information in the perfection of managerial science in the post-industrial society. The result was not a euphoric or ironic utopia, but a fundamental re-structuring of urban space based upon rational principles derived from the very sources rejected by Tafuri: capitalism and technology.

Since Tafuri has already directed us there, Restany's *Domus* article can serve as a good starting point to begin to describe the situation of the French Neo-avant-garde, and the ideological issues at stake in historicizing it. Writing from the vantage of August, 1968, Restany's very selective survey of European and American artistic production attempts to argue for the primacy of experimental art relative to the new "structural evolution" of society signaled by the May protests. But Restany's ideas about the role of the new "Prospective aesthetic" in the new society was markedly different than many of those active in the uprisings. Thus the article begins by making a distinction:

> At the time of the explosion of protests in the spring of 1968 a double cry of alarm was sounded simultaneously in New York and in Paris. Harold Rosenberg, the famous American theoretician of Action Painting, wrote: "the history of art has reached its end." The poet-critic Alain Jouffroy published a pamphlet on the abolition of art: art appears here as reactionary travesty of thought, the major obstacle used by the bourgeoisie to oppose the cultural revolution, the half-measure that prevents us from reaching the extremity of the real....
>
> If one objects that there really does exist a true modern art, they declare: 'your modern art has the sole advantage of demonstrating the fact that the art of

[35] Alain Robbe-Grillet, quoted by Ross, *Fast Cars, Clean Bodies*, 2.

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> all times has been utterly futile.' How far can one go in sharing this opinion, which reflects the sentiment of an entire section of the young protestors? This *a priori* condemnation of art is based upon a partial analysis of the problem. It is a partial and partisan analysis that, because it misunderstands the increasing development of the experimental sector, and of a creativity of synthesis, pertains only to the most anachronistic part of aesthetic production, that of the traditional genres.[36]

Thus, Restany establishes a post-May dichotomy between the nihilists (Rosenberg, Jouffroy, the painter Daniel Buren, etc.) and those interested in a new synthesis, a new integration of modern concerns. The former group, for Restany, are little more than post-Duchampian Marxists and anarchists, muttering about the evils of the bourgeoisie and ignoring the vast potential of the new techniques and aesthetic concerns of the modern era. In their lust for "contestation for the sake of contestation," and their utter rejection of official culture and the current system, they had neglected "the foundations of the next."[37]

It is important here to underline the political aspects of Restany's distinction. Too often, the historical consideration of the events of May '68 forge a dichotomy comprising the culture of Gaullist officialdom, and a purely contestatory, usually Situationist, resistance (the unified students and workers). However, somewhere in between these two extremes was another development, represented here by Restany. It really is difficult to say whether this development was a radicalized version of official culture, or a compromised version of resistance culture; it has elements of both. Were we to select a political exemplar of this position—against de Gaulle, but for technological modernization—we might point to a figure like Pierre Mendes France, a radical politician supported by the modernist magazine, *L'express*. At any rate, Restany provides a perfect

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[36] Restany, "Le livre blanc," 41.

[37] Restany, "Le livre blanc," 42.

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description of this position (at least its aesthetic aspects) in his optimistic formulation of the dawning society.

For Restany, the society in the making was one of a true collectivity whose aesthetic efforts would be coordinated by high-tech research centers and newly-conceived "living museums." The results would be the eradication of the traditional "work" of art, its diffusion into space, its embrace of technology, and its total integration into that beloved and vague entity, the "city of tomorrow." For Restany, who was obviously inspired by his friend Ragon, this future environment would be Spatial, and would entail the eradication of the distinction between work and leisure, the incorporation of "game-art" (*L'art-jeu*), the Happening, architecture-sculpture, and other technological, cybernetic spectacles.[38]

Restany had evoked this new environment a year earlier in a massive exhibition called *Superlund* [Figure 1.16] (after Lund, the Swedish city in which it was held): "Superlund was not an exhibition like the others, but more of a demonstration, an illustration of my own Prospective thought. The event assembled more than a hundred very different works, numerous functional objects, the polycyclical structure of Eugenio Carmi (an electronic device projecting images onto three screens simultaneously), labyrinthine routes, luminous structurations, musical robots, environments, two large *Expansions* by César, examples of industrial design, and models of Mobile Architecture and Spatial Urbanism." For Restany, *Superlund* was also a kind of culmination and summary of the past decade of artistic activity, whose epicenter had been the Parisian avant-garde, from Yves Klein's 1958 "exhibition" of empty space at the Galerie Iris

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[38] Restany, "Le livre blanc," 42-44.

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Clert, through Arman's filling of the same gallery in 1960 with various ready-made objects ("après le Vide, le Plein"), and including the work of Jean Tinguely, César, Niki de Saint-Phalle, and others.[39] To this list, we could add the activities of the GIAP, with whom Restany was allied from 1965 onwards.

For Restany, *Superlund* was a supreme moment of synthesis, a demonstration of the common concerns of diverse practitioners and researchers in the ambient realm in which technology and art converged: the city. Moreover, it represented the path towards the spiritual evolution of mankind, who would once again bridge the gap between itself and nature. But for Restany, this implied a new conception of nature that "bases itself on the planetary extension of industrial and urban phenomena. Current art issues directly from these morphological elements of urban folklore and the resources of technology."[40] This "socialization of art" was meant to conduct "the forces of creation towards a convergence; a dynamic synthesis; a technological metamorphosis: it is through this re-structuration that man and reality find their true modern visage, that they become *natural* once again, overcoming all alienation."[41]

Restany's orgiastic celebration of post-industrial society was exactly the reason for Tafuri's vehement rejection of his ideas, and the Neo-avant-garde that he represented. But as one of the key representatives of avant-garde art and architecture in France during the sixties, it seems worthwhile to inquire somewhat more closely into this new idea of the integrated city in his thought, and beyond. As *Superlund* demonstrated, Restany's

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[39] Restany, "Le livre blanc," 43.

[40] Restany, *Superlund*, 27.

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architectural repertoire was essentially taken directly from the circle around his colleague Michel Ragon. The exhibition featured works by Yona Friedman, Walter Jonas, Georges Patrix, and Nicolas Schöffer, all founding members of GIAP. But the role of Spatial Urbanism was, at this moment, far from incidental, and was in fact central to Restany's conception of man's recuperation of "urban nature," and indeed, it appears as the key historical phenomenon in man's evolution in the "second industrial revolution," because it provides the physical structure for the setting in motion of social communication and ludic activity:

> Prospective thought in architecture is charged with the urban sensibility. Spatial Urbanism, which is based upon the mobility of the individual habitat, responds to the parallel evolution of social structures towards an increasing mobility: work, family, leisure, vacations, second residences, etc...The architecture of the air and the climatization of vast geographic spaces allows for the return to the state of nature in a technological Eden. The development of visual art and all the propositions of space have their full justification, which is to restore to the alienated and mechanized urban crowd the sense of play, of the festival, of collective emotions, and the taste for grand metamorphoses.[42]

But were the connections in *Superlund* as self-evident as Restany maintained? Was there truly a seamless space unifying the architectural models of Friedman and Jonas, for instance, and the pourings of César and the "accumulations" of Arman? There is a certain formal similarity, to be sure, between Jonas's *Intrapolis* models [fig. 1.17] and one of Arman's *Accumulations* [fig. 1.18]: serialized units added to one another in an ascending network that achieves a sculptural spatiality. But Arman's inherent critique of the mass-produced objects he utilizes (in this case Renault fenders) and the society which produces them is completely lacking in Jonas's Spatial City, the goals of which are

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[41] Restany, "Le livre blanc," 50. This passage is also cited by Tafuri, *Architecture and Utopia*, 140. This citation is translated into English, but I have substituted my own translation in the quote above.

[42] Restany, *Superlund*, 37-38.

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purely operational—to ease congestion and provide sunlight to the greatest number of individual dwellings possible. Of course, the potentially subversive aspects of *Nouveau Réalisme* were also suppressed by Restany himself,[43] thus it comes as no surprise to find him unaware of any tensions that might have been established between his choice of works for the exhibition.

This ideological blind spot was shared by Ragon, and most of the Spatial Urbanists themselves, who sought integration as opposed to entropy. This is one of the defining characteristics of the third political category described above, resting uneasily somewhere in between the dominant culture of the French state at the beginning of the Fifth Republic, and the radical refutation of it. Looking back at the sixties, Restany did not see—as so many of his contemporaries did—a progressive Taylorization of everyday life sponsored by the State, only missed opportunities: "This profound evolution would have borne fruit, if the Gaullist administration had really taken it into account, which is to say, if it had had a radical, modern option in matters of artistic policies. But the State, which has no cultural strategy, opted for compromise."[44]

We are thus faced with the critical task of appraising a group of "utopians" who rejected the radical connotations of the term. They asserted that, instead of overthrowing the dominant industrial culture, it was necessary to embrace it more fully, to follow its logic to the extreme, in order to restore humanity to its ideal state of equilibrium in a new natural order. I am less concerned here with critiquing this position, than with tracing its

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[43] See Cone, Michèle C., "Pierre Restany and the Nouveaux Réalistes," *Yale French Studies*, no. 98 (2000): 50-65, and Buchloh, "Plenty or Nothing."

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transposition into architectural and artistic form, because I believe that the mechanisms and results of this transposition shed a specific and significant light on the history of modernism at its nadir, so to speak. As indicated above, it is within the Spatial conception of the city that the significance of these concerns is revealed.

Spatial Urbanism

The search for the ultimate infrastructure led, in France much more so than elsewhere, to an extended meditation on the qualities and possibilities of space itself. The result was a diverse discourse that approached space mathematically, aesthetically, and socially. Space became so important that many designers felt the need to suppress the physical structure of architecture altogether, in favor of ambience and movement. But the suppression was only perceptual. The space of "spatial urbanism" was not the space of void or absence, but rather a space projected on the terrain as a structured and structuring entity (even if it was to become invisible). This conception of space would allow the surface of the earth to be multiplied into many superimposed layers, crossed and connected by horizontal, vertical and diagonal lines of force. Architects and designers imagined open spaces whose division could take any form, from traditional walls and floors, to atmospheric, luminous, and sonorous "partitions." This space was physical, phenomenological, mathematical, social, and plastic. It was conceived by a poetic impulse and thought realizable via industrial technologies. Like the space frame structures that were its most common form, this space was the culmination of science and art, and material and social expression.

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[44] Restany, "Le livre blanc," 44. By "Taylorization" is meant the general sense that everyday activiites were being submitted to the same kind of analysis and quanitification that

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The rhetoric of the spatial led to a proliferation of references, all of which contributed to the discourse on "three-dimensional" planning during the sixties. Some of the most important projects were the "spatio-dynamic" cities of Nicolas Schöffer, comprising giant cybernetically-controlled towers containing volumes that could be used for living and working [fig. 1.19], and Paul Maymont's "mushroom" structures that were massive, circular towers composed of a central structural core, with emanating surfaces for habitation, green spaces, etc., and that could be placed on the ground, or could float on a body of water using giant concrete bases with air-filled cavities [fig. 1.20]. Perhaps the most famous example is Yona Friedman's "*Villes Spatiales*" that were designed to be raised over existing cities (or the countryside), creating a totally new, multi-level surface that could contain habitations, offices, and circulation [fig. 1.21].

By way of etymology, Ragon coined the phrase "*urbanisme spatial*" in 1962. It was derived from several sources that seem to date to the late fifties. Friedman's "spatial" proposals date from circa 1958.[45] In 1959, Édouard Albert was also discussing "spatial architecture."[46] Outside France, the German-born engineer, Ekhard Schulze-Fielitz (and close colleague of Friedman) also used the phrase "Spatial City" around 1960, and more generally, the usage can be traced back to that great forerunner of the

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Henry Ford had applied to the assembly line early in the century.

[45] Friedman first used the phrase "ville spatiale" in 1958, but earlier projects, such as his "blocs à l'enjambée" or "span-over blocks" from 1957, and the sketches accompanying his "Mobile Architecture" manifesto are essentially Spatial. Friedman has stated that the word "spatial" was suggested to him by a "Madame Diamant-Berger" in 1959 [see Ragon, *Les visionaries*, 63]. He is undoubtedly referring to Rennée Diamant-Berger, who was an editor of *L'architecture d'aujourd'hui* at the time. It seems likely that, if Diamant-Berger is the origin for his use of the term, her suggestion must have been made earlier than he remembered.

[46] See Ragon's discussion of a "Spatial Architecture" conference organized by Albert: *Où vivrons-nous demain*, 122-124.

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utopias of the sixties, Frederick Kiesler, whose basic dicta demanding "no walls, no foundations," and "[a] building system of tensions in free space," remained the core ideas in the post-war context [fig. 1.22].[47]

There were several other key projects from the interwar period and somewhat later that deserve mention here as forerunners. First and foremost, according to Reyner Banham was the image of Le Corbusier's projects for Algiers from the early 1930s, and in particular his *Fort L'Empereur* project from 1931 [fig. 1.23].[48] Certainly, much of the work of the German Expressionist architects was influential as well, not to mention an important project like El Lissitsky's *Sky Hook* towers (1926), which actually comprised a massive, horizontal platform at its top. Later, several projects by Louis Kahn were also much published and discussed: namely his *City Hall* project with Ann Tyng (1958) [fig. 1.24], and his earlier *Philadelphia City Center* (1952) [fig. 1.25]. In the French context, a project for a massive exhibition hall by Eugène Beaudouin, Marcel Lods, and Vladimir Bodianski of 1933 was important [fig. 1.26]. During the fifties and sixties, the Brussels and Montreal world's fairs of 1958 and 1967 respectively provided the most concrete inspiration (see Chapter 4).

In keeping with Kiesler's and other avant-garde requirements, a generation of French engineers, architects, and artists in the late fifties and early sixties began to

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[47] Eckhard Schultze-Fielitz, "The Space-City," in *Ulrich Conrads*, ed., *Programmes and Manifestoes on 20th-century Architecture*, Trans. Michael Bullock (London: Lund Humphries, 1970), 175-176. See also Frederick Kiesler, "Space City Architecture," in *Programmes and Manifestoes*, 98. It should be noted that Kiesler's ideas, and by extension much of the rhetoric of the French avant-garde in the sixties is ultimately derived from the interwar avant-gardes such as Dutch de Stijl. The latter asserted an extensive set of theories concerned with the grid, and its mystical as well as its technological aspects.

[48] Banham, *Megastructure*, 8.

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produce spatial designs. The idea of a unified structure, a suspended, "artificial" surface, above or below the actual surface of the earth (or existing city), was fundamental, as was the idea of escaping the usual constraints of traditional architecture and planning. The flat grid of the traditional (modern) city, with its old dichotomy of horizontal circulation and vertical dwelling, was to become "three-dimensional," the old grid was to multiply itself volumetrically, and dwelling, working, and moving would all take place simultaneously in this new urban structure—horizontally, vertically, and diagonally. Or, as Albert said: "the poetry or our everyday existence is both too anxious and too proud to remain in the horizontal domain. It pushes us to take complete possession of space in its composition and expansion."[49] To meet this expansion, Albert proposed "tree" structures with volumes suspended from structural cores, and linked by walkways [fig. 1.27].

Friedman's "Spatial Cities" are probably the ultimate expression of these ideas [Figs. 1.28, 1.29]. For these, he proposed massive spanning structures of several stories, supported about 10 meters above the ground on improbably thin *pilotis*. Within the structure, "containing" volumes, void spaces, and circulation routes (for vehicles and pedestrians) would constitute the urban fabric. According to Friedman, "[Spatial Urbanism] consists of a three-dimensional infrastructure (multi-deck space-frame grid). Volumes utilized for habitation, offices, etc., are placed in the voids of this infrastructure."[50]

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[49] Édouard Albert quoted in Michel Ragon, "Vers un urbanisme spatial," *Architectures formes functions*, no. 12 (1965-1966): 55.

[50] Friedman, *L'architecture mobile*, 11.

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However, Friedman saw Spatial Urbanism as simply "the technique of mobile architecture and urbanism,"[51] which is to say the physical implementation of his theories of mobility and change, which were formulated earlier, and which would persist long after Friedman lost interest in the design of physical environments.[52] The ability to demount and reconfigure the physical environment (within the fixed infrastructure) was more significant to Friedman's designs than the actual appearance of the structures themselves. Further, the "spatiality" of the structures was conceived as arising from both of these factors: the conceptual and social importance of mobility, and the physical extension of the infrastructure.

The link between spatiality and mobility is also very present in Constant Nieuwenhuys's *New Babylon* (1958-1967), the name of which was suggested by Guy Debord, his Situationist colleague.[53] Constant's notions of ambiences and increased circulation within a massive structure that constituted an artificial surface or surfaces[54] were directly in line with Spatial Urban thought [Figs. 1.30, 1.31]. But, despite Ragon's

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[51] Friedman, *L'architecture mobile*, 11.

[52] See Yona Friedman, "Manifesto: *L'architecture Mobile* [1956]," in *Yona Friedman: Structures Serving the Unpredictable* (Rotterdam: NAi, 1999), 21-22. Friedman's first formulation of mobile urbanism (as opposed to mobile architecture) dates from 1957, and was first published in an article featuring works by other GEAM members: Günther Kühne, "Mobiles planen mobiles bauen," *Bauwelt*, no. 21 (May, 1958): 491-493. See also Yona Friedman, "Résumé du programme de l'urbanisme mobile," in *L'architecture mobile* (privately printed, 1959), 18-19; reprinted in *L'architecture mobile* (1971), 62-64; translated as "Program of Mobile Urbanism," in Ockman, *Architecture Culture*, 274. These texts, and portions thereof, were re-published in various forms by Friedman many times throughout the sixties, and beyond.

[53] Mark Wigley, *Constant's New Babylon: The Hyper-Architecture of Desire* (Rotterdam: Witte de With/OIO Publishers, 1998), 31.

[54] The literature on *New Babylon* is now very complete. The definitive account is Wigley, *The Hyper-Architecture of Desire*. See also: Sadler, *The Situationist City*: 122-155; and Hilde Heynen, *Architecture and Modernity* (Cambridge: MIT Press, 1999), 151-174.

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best efforts to incorporate Constant's work into the "prospective" cause,[55] and Constant's informal participation in Friedman's GEAM,[56] there were fundamental incompatibilities (even if Ragon failed to recognize them) between *New Babylon* and other Spatial projects. As Simon Sadler has stated: "Constant sought more than a structural reevaluation of the existing city," and in doing so created a more "radically utopian" vision than contemporaneous avant-gardes.[57] In short, Spatial Urbanism was seeking to fully incorporate itself into the industrial and economic infrastructures of society, while Constant was seeking (at least ostensibly) to break from them.[58]

While Friedman and Constant were engaged perhaps more with the social aspects of their research (though for different reasons), other Spatial Urbanists were more preoccupied with the physical structure of the new city. Thus the work of a generation of visionary engineers became the sources for new topological explorations. Pioneers such as Robert Le Ricolais, René Sarger, Stéphane du Château, Z.S. Makowski, Conrad Wachsmann, and of course Fuller, provided compelling structural models and commentary on the seemingly-infinite possibilities of prefabrication, light space frames,

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[55] Ragon included *New Babylon* in *Où vivrons-nous demain?* and would later attempt to annex it to the great "profound collective impulse" towards Prospective architecture; see Ragon, "Actualité de la recherché," *Architecture formes functions*, no. 13 (1967), 86-87. Constant was never a participant in the GIAP.

[56] See Sadler, *The Situationist City*, 128-129. Constant's participation seems to have been limited to an exhibition and a presentation at an accompanying symposium. He does not seem to have been a regular member.

[57] Sadler, *The Situationist City*, 134.

[58] Of course, this break was made problematic by obvious similarities between Constant's work and those of the Spatial Urbanists, for example. *New Babylon* clearly drew inspiration from the technological avant-gardes, and this became a point of contention between the artist and his Situationist colleagues, and ultimately led to his expulsion from the group. See Wigley, *The Hyper-Architecture of Desire*, 31-34.

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and cable suspension structures. And thus the "space frame," was promoted from its humble industrial origins, to form the infrastructure for entire cities [Fig. 4.31].

The attraction of space frames is summed up well by Schulze-Fielitz: "Despite rigid systematization, spatial modular co-ordination offers great freedom of choice and arrangement and hence a synthesis of the only apparently mutually exclusive tendencies of mass production and individual multiplicity."[59] He continued this thought in another essay: "[t]his synthesis will only be possible under the auspices of a coordination that allows for a spatial modulation that, despite the strictest systematization, will produce nothing less than a vast field open to [individual] liberty and sensibility."[60] Space, and the physical structure used to articulate it came to be seen as a kind of field of synthesis, hosting the convergence of those dichotomies that had defined modern architecture's internal tensions since its beginning—freedom and standardization, art and science, structure and spontaneity, monumentality and rigor, etc.. While these concerns were addressed internationally, they had a particular appeal and importance in the French context. The reasons for this are too historically vague to warrant in-depth exploration. It seems too problematic to appeal to a hypostasized French *zeitgeist*, or their "fascination with geometry," or inherent Cartesianism, etc., although these cultural undercurrents should not be totally dismissed either. Suffice it to say that the French utopianists of the 1960s came to be known chiefly as Spatial Urbanists (even if not all of them fit this category) because of their commitment to this conception of space as transparent and

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[59] Schulze-Fielitz, "The Space City," 175.

[60] Eckhard Schulze-Fielitz, "Une théorie pour l'occupation do l'espace," *L'architecture d'aujourd'hui* 33, no. 102 (June-July, 1962): 80.

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abstract, yet rigidly and logically structured, and because of their desire to construct city-scale spatial structures.

It is the gigantism of the French conception of these structures, and their visual impact (or lack thereof) that Banham considers characteristic of the French "school" of megastructuralists, and for which he criticizes it:

> ...of all megastructure visions [Spatial Urbanism] is the most abstract, least material and most conveniently 'elegant', and is called spatial only because it adds a third, vertical dimension to the customary two of the planner's flat paper surface to give a three-dimensional planning grid liberating the plan from the ground.
>
> As a concept this was not new; what distinguished urbanisme spatial from previous ideas of the sort was the proposal to build a physical grid of this sort in a form light enough for it to look no more than an abstract grid.[61]

It is tempting to reduce, as Banham does, the spatial impulse to a visual directive; to see the material and technological aspects of architecture usurped in favor of a minimalist aesthetic, or complete de-materialization. This was a real contradiction which the Spatial Urbanists never adequately addressed, and which I will address more fully in the proceeding section of this chapter.

But there was also a practical aspect of Spatial Urbanism that Banham failed to address, which was its critique and re-formulation of the *Athens Charter*, developed by the participants in the *Congrès Internationaux d'Architecture Moderne* (CIAM) in 1933, and published in 1943.[62] For many—utopianists and others included—the spatial idea was engaging because it allowed for the re-integration of the four urban functions (housing, work, recreation, and traffic), which the *Athens Charter* had segregated. Justus

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[61] Banham, *Megastructure*, 57-8.

[62] *La charte d'Athènes, avec un discours liminaire de Jean Giraudoux. Urbanisme des C.I.A.M* (Paris: Plon, 1943). On the activities of CIAM more generally, see Eric Mumford, The CIAM discourse on urbanism, 1928-1960 (Cambridge: MIT Press, 2000).

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Dahinden called for: "...a new development which will reintegrate our social and urban structures and reunite the diferent social groups and activities."[63] While this Spatial idea was an oversimplification, it served to underline the desire to maintain dynamic urban spaces, with all of their cultural and industrial activities centralized, and not dispersed and segregated, as in the *villes nouvelles* and *grands ensembles* (of which Spatial Urbanism was an explicit critique—see Chapter 3). As Ragon stated, "The separation of work, habitat, and leisure, keyword of architects of an earlier avant-garde, was surpassed in so far as it was envisaged horizontally. [In Spatial Urbanism] the different functions continue to be placed in parallel relative to one another, but via superimposed layers."[64]

The critique of the architectural avant-garde of the interwar period was not limited to the French context, and indeed it forms a leitmotif for architecture in the fifties and sixties. The Team 10 critique of the older generation is a case in point; the assertion that the guidelines established by the *Athens Charter* were too strict and mechanized to reflect a new sociological awareness of the city and its inhabitants led to new methods of classifying urban spaces, methods based not upon the segregation of functions, but upon the identification of spatial relationships between different kinds and concentrations of activities and populations.[65] The result of this new research can be seen in the work of

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[63] Justus Dahinden, *Urban Structures of the Future* (New York: Praeger, 1972), 11; quoted by Banham, *Megastructure*, 202. Dahinden was a young Swiss architect who, along with the artist Walter Jonas formed the German-speaking contingent of Ragon's GIAP. By the time he published his large survey, *Urban Structures of the Future*, it read like an accidental eulogy, as Banham stated.

[64] Ragon, *Où vivrons-nous demain?*, 50.

[65] See, for instance, Allison and Peter Smithson, *Team X Primer* (Cambridge: MIT Press, 1968). The Smithson's theories of human relationships were derived from the British Independent Group's interest in popular culture and life on the streets.

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Team 10 members, in their notions of " scales of association" [66] and "clusters," and in the use of superimposed branching arrangements of agglomerations by the Paris-based firm Candilis, Josic, Woods, whose *Toulouse Le Mirail* new town was the most significant application of these concepts [fig. 1.32]. These schemes were the physical expression of the idea of "habitat," which was Team 10's attempt to extend the simple notion of housing or dwelling in a more sociologically comprehensive way.[67]

Spatial Urbanism arose from these same concerns—social animation and its architectural embodiment—but was paradoxically more literal and more abstract.[68] Taking the idea of three-dimensionality to heart, Spatial projects literally stacked urban functions one on top of the other, resulting in an "urban fabric" composed of industry, habitation, circulation, leisure spaces, governmental functions, etc., which would occupy the same massive volume in space.

This impulse was not purely utopian, and some examples, or near-misses, were produced in and around Paris. The most significant examples were the development in the western suburbs of the *Défense* quarter, and in the 15th arrondissement, of the *Front de Seine* project by Raymond Lopez and Henri Pottier (1966-1978) [Fig. 3.4]. Both of these urban schemes, which developed and grew throughout the decade of the sixties were based upon the fundamental idea of the separation of different types of traffic

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[66] See Bakema, et al., "The Doorn Manifesto [1954]" in Ockman, *Architecture Culture*, 183.

[67] See Jean-Louis Cohen, "The French Group and the Idea of Habitat," *Rassegna* no. 52 (1992): 58-67.

[68] Alexandre Persitz recognized the connections between Team X activity, megastructuralism, and Spatial urbanism quite early. He viewed the latter as the ultimate synthesis of the earlier concerns with clusters, and megastructural "ziggurat" form. See: Persitz, "Vers un urbanisme spatial," *L'architecture d'aujourd'hui* 33, no. 113-114 (April-May, 1964): 90-99.

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(vehicular and pedestrian), and featured tall buildings (for business and dwelling), public spaces (including restaurants, shopping, and sports facilities), and pedestrian walkways suspended above streets and parking for automobiles. Another example in Paris of this type of "spatial" design is Édouard Albert's apartment building on the rue Croulebarbe (with Roger Boileau, 1960) made of prefabricated steel tubes and pre-cast concrete floors [fig. 1.33]. The design includes a void approximately half way up the tower that was intended to be a suspended "street" connecting this building to a nearby public space in an urban circuit (this part of the design was not realized). It is clear, though, that Albert saw a larger urban potential for this kind of "three-dimensional" concept.[69] But in typically hyperbolic fashion, the Spatial Urbanists themselves took these tentative successes and incorporated them into their desire for entirely suspended cites, and a spatially-derived habitat.

Plasticity and the Integration of the Arts

There is another aspect of Spatial Urbanism (and other projects produced by GIAP members) that needs to be mentioned here. This is the importance of the synthesis or integration of the arts. As important as the infrastructure was to Spatial Urbanism, the plastic qualities of space were also a preoccupation, though in a less explicit and less clear way. Part of the uncertainty arises from the word *plasticité* itself, which can be used to describe painted murals, sculpture, or simply the juxtaposition of different volumes and/or surface treatments in a building's composition. Further, it can be used in

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[69] Édouard Albert, "Architecture tridimensionnelle à Paris," *L'architecture d'aujourd'hui* 34, no115 (June-July, 1964): 108-109.

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reference to a work itself (building or otherwise), or the spaces or interstices "animated" by a work or group of works. Despite such vagaries, plasticity came to signify one of the most important goals of architectural and urban form—it was a kind of "shifter," to employ a term from linguistics, that encompassed technological and aesthetic standards, and whose ultimate purpose was social animation and participation.

In 1944 Le Corbusier had officially declared the beginning of the "plastic epoch," and his poetic and dialectical idea of "ineffable space" would exert a tremendous influence in the French context—much more so than elsewhere.[70] By far the greatest animator of this plastic epoch was the artist/engineer André Bloc (1896-1966). His journals *L'architecture d'aujourd'hui*, and *L'Art d'Aujourd'hui* (subsequently re-titled *Aujourd'hui*, and which ran from 1949 until 1967, shortly after Bloc's death) set the agenda to a great degree for the architectural avant-garde in France until the late sixties. Though his life and work are outside the parameters of the current study, a few words need to be said here simply because of his influence and significance, and because, unfortunately, no complete study has been undertaken as of yet.[71] Bloc himself was an engineer and a sculptor. He was also a frequent collaborator on architectural projects, most notably with Claude Parent, who designed his (Bloc's) residence in Antibes (1959-

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[70] "C'est une épopée plastique qui commence" is the title of a 1944 article by Le Corbusier cited in Ockman, *Architecture Culture*, 65. Ockman also reprints the essay "Ineffable Space," 66, which originally appeared in his "Espace indicible," *L'Architecture d'aujourd'hui*, out of series issue (January, 1946): 9-10; translated as "Ineffable Space," in Le Corbusier, *New World of Space* (Reynal & Hitchock, 1948), 7-9.

[71] One source which attempts to rectify this lack of information is: Ann Koll, "The Synthesis of the Arts in the Context of Post-World War II: A Study of Le Corbusier's Ideas and his Porte Maillot Pavilion," (PhD. Dissertation, City University of New York Graduate School, 1999). Koll focuses mainly on Le Corbusier's ill-fated project for an art and architecture pavilion in the Bois de Boulogne, but she appends a brief discussion of Bloc, the journal *Aujourd'hui*, and the Groupe Espace.

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1964). Their most famous work together is the *Pavillon d'Iran* (1968), for which Bloc served as "plasticien-conseil" [fig. 1.34].

Bloc's "research" in sculpture is perhaps the best indication of his concerns. He worked in various styles that most would have considered antithetical—he produced both bio-morphic, expressionistic works, as well as tensegrity-type geometrical space frame sculptures [Figs. 1.35, 1.36]. He seemed to enjoy the distinction between opaque mass and transparent wire frame. He also took quite literally the imperative to synthesize art and architecture, building his own *Sculptures Habiticles* (1962-1964) on his own property in Meudon, just outside Paris [fig. 1.37]. These works were quite literally hollowed-out sculptural masses, constructed with primitive vaulting techniques and plaster-covered brickwork. These works were clearly meant to evoke the plasticity of space in the most visceral manner possible, replacing the rationalism of structural articulation with a purely sensorial experience. Another notable, but seldom remembered project was Bloc's production in 1963 of a system of prefabricated "éléments typifiés"- abstract, Neoplasticism-inspired concrete blocks that could be joined together to form walls and façade treatments [fig. 1.38]. This idea is fascinating insofar as Bloc managed to combine the plastic impulse with mass-produced objects that could be purchased and used by professional architects, though it seems that few took advantage of the system.

Various avant-garde groups also drove the plastic impulse at this time: first and foremost was the *Groupe Espace* (formed by Bloc and Felix Del Marle in 1951 and active until c. 1957[72]), but there were others such as the *Groupe de Recherche d'Art Visuel*, *L'œuf: Centre d'études*, *Architecture Principe*, and the GIAP. Bloc and Le

[72] 1957 is suggested as the last active year of the Groupe Espace by Koll, "Synthesis of the Arts," 229.

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Corbusier together formed the *Association pour une Synthèse des Arts Plastiques* in 1949.

In addition to all of this organizational activity on the part of the avant-garde in Paris, established architects like George Nelson, André Wogensky, José Luis Sert, and others were constructing important "essays" in the integration of the arts in France during the fifties and the sixties. Nelson worked very closely with Fernand Léger on the *Hôpital Mémorial France-États-Unis* in Saint-Lô (1948-1956), which was notable not only for the latter's mural work, but for his polychromy scheme for the exterior and interior "coding" of the various areas of the building and their functions [fig. 1.39]. In 1964, Sert completed the *Maeght Foundation* complex near the French Alps, which housed a large art collection, but was itself an extremely plastic architectural work [fig. 1.40]. At the same moment in Paris, André Wogensky, a close follower of Le Corbusier, employed the sculptor Marta Pan to install concrete abstractions in the courtyard of his *Necker Hospital Center* (1963-1965) [fig. 1.41]. One of the most important architects in Paris engaged with these ideas was Jean Ginsberg, whose apartment building on rue de Docteur-Blanche (1950-1953) (just steps away from Le Corbusier's Villas Roche and Jeanneret) was an early manifesto piece of the post-war synthesis of the arts [fig. 1.42]. Its courtyard included a fountain and sculpture by André Bloc.

Within these various projects one can discern distinct ideological positions *vis à vis* art and the legacy of functionalist architecture. Bloc, at least initially, saw no contradiction between his formal pursuits and the epistemological foundations for architectural rationalism. Others, however, began to see the organic aspects of new abstract sculpture as a viable alternative to the rigidly-structured aesthetic of the

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International Style. As a call to freedom of imagination and a return to "human" values, artists and architects turned to a variety of sources in this post-surrealistic mode—organic design, natural rock formations, extreme geographical locations like the desert or ocean, anonymous or indigenous "architecture without architects," etc..[73] Again, these attitudes are evident internationally, but took on a distinct significance in the French context, where urban debates, and the social questions surrounding the *grands ensembles* were placing incredible pressure on the architectural establishment.

Concurrent with these developments, the synthesis of the arts also had strong intellectual support (in addition to Bloc's constant polemicizing in his journals) from artists and critics like Fernand Léger, André Hermant, Pierre Joly, and Pierre Francastel, who all helped keep the question of synthesis and integration alive well into the late sixties.[74] The tremendous intellectual effort expended in searching for plastic forms that somehow reflected those characteristics specific to the post-industrial era explains the tenacity of the idea of the integration of the arts in France, where it continued long after its initial, international post-war flourishing under the auspices of "the new

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[73] Number 53 of Bloc's journal *Aujourd'hui* was a kind of manifesto registering some of these concerns. It signaled a change in editorial direction for the magazine, and featured images of deserts, caves, icebergs, stalactites, a contribution by Bernard Rudofsky, and photos of Antonio Gaudi's structures, etc. in various articles that urged a return to free expression and plasticity in architecture. See especially Günther Feuerstein, "Fonction: provocation," *Aujourd'hui*, no. 53 (May/June, 1966): 26-27.

[74] See Fernand Léger, *Fonctions de la peinture* (Paris, Gonthier, 1965), trans. Alexandra Anderson as *The Functions of Painting* (New York, Viking Press 1973); André Hermant, *Formes utiles* (Paris: Éditions du Salon des Arts Ménagers/Vincent Fréal et ciè, 1959); Pierre Joly, *Pierre Joly: l'art, l'architecture et le mouvement moderne, texts critiques 1958-1990* (Paris: Éditions de la Villette, n.d.); Pierre Francastel, *Art et techinique* (Paris: Minuit, 1956), trans. Randall Cherry as *Art and Technology* (New York: Zone Books, 2000).

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monumentality."[75] Francastel is especially interesting here, because he was one of the few commentators who attempted to forge connections between aesthetic discourse and other intellectual developments of the time, such as the Structuralist anthropology of Claude Lévi-Strauss.[76] Francastel relied upon Lévi-Strauss (and many other sources) to assert that the "plastic impulse" was as fundamental an historical and human force as that of technology, etc., and should be analyzed as such. He concluded that what was needed in the modern era was an understanding of the true forces governing all types of production, so that a true plastic expression could emerge, which was appropriate to its time.

Though there is little evidence of direct influence, Francastel's formulation of the transformation of the plastic object, and its incorporation into the built environment seems close to the formulations that arose form the GIAP discourse from 1965 to 1970. The artists and critics who participated in the GIAP were pivotal in asserting the rhetorical shift from the "synthesis" to the "integration" of the arts that is evident during the sixties. They clearly wanted to leave behind the mystical philosophical connotations of the former term in favor of the more objective tone of the latter. This is not to say that there were no expressionists in the group, because there were: the sculptors Pierre Szekely and Mathias Goeritz, for example. However, as I will discuss in the last chapter of this dissertation, the stronger motivation in the group was towards an integration of plastic and technical concerns on the plane of communication and at the scale of the

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[75] See Paul Zucker, Ed., *New Architecture and City Planning* (New York: Philosophical Library, 1944), 549-604; and Sigfried Giedion, *Architecture, You and Me* (Cambridge: Harvard UP, 1958), 2-98.

[76] Francastel, *Art and Technology*, 143 and *passim*.

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Spatial City. The best examples of this are Nicolas Schöffer's "cybernetic towers," (1954-1966) which were complex, computer-controlled kinetic sculptures operating on feedback principles. Schöffer's *Cybernetic Tower* installed in Liège, Belgium (1956) was controlled by technology provided by the electronics company Phillips [Figs. 3.56]. Schöffer envisioned not only architectural, but urban applications for his towers.[77] Also, Victor Vasarely (another GIAP member and close friend of Schöffer—not to mention pioneer of Op Art) envisioned a radical urban integration of the arts, based upon his theories of geometric abstraction, which he termed *Plasti-cité*.[78]

The French Context

In Paris there are no houses, and the inhabitants of the big city live in superimposed boxes.

Gaston Bachelard[79]

Though reconstruction policies physically shaped the urban landscape in postwar France, many of the concepts and conflicts central to French modernization in the earlier part of the Twentieth Century remained unresolved in the postwar period. For instance, the struggle to maintain a sense of national identity in the context of global culture that was so evident in the thirties was only made more difficult in the climate of the Cold War. The situation was exacerbated by the sheer rapidity of the French adoption of the accoutrements of (American) modernity during the forties and fifties. As Ross describes:

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[77] Nicolas Schöffer, *La tour lumiere cybernétique* (Paris: Donoël, 1973).

[78] Victor Vasarely, *Plasti-cité: L'oeuvre plastique dans votre vie quotidienne* (Paris: Casterman: 1970). See also Maurice Fréchuret, "La cité idéale et la tribu primitive," in *L'art en Europe: Les années décisives 1945-1953* (Geneva: Albert Skira, 1987), 136-143.

[79] Gaston Bachelard, *La poetique de l'espace* (Paris: PUF, 1958). Trans. Etienne Gilson, as *The Poetics of Space* (Boston: Beacon Press, 1964, 1969 paperback edition cited), 26.

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> The speed with which French society was transformed after the war from a rural, empire-oriented, Catholic country into a fully industrialized, decolonized, and urban one meant that the things modernization needed—educated middle managers, for instance, or affordable automobiles and other 'mature' consumer durables, or a set of social sciences that followed scientific, functionalist models, or a work force of ex-colonial laborers—burst onto a society that still cherished prewar outlooks with all of the force, excitement, disruption, and horror of the genuinely new.[80]

Architecture—both built and utopian—was more than just one symptom among others in this traumatic progression. The demands of reconstruction, and migrating populations (immigrants into France, and rural dwellers toward the cities) led not only to much immediate construction, but to a building culture and an administrative structure that were unique in the world. The climate was one of strained efficiency; much was built, quickly and cheaply, but rarely without major design compromises and public controversy. Most commentators on the French situation (and there are many) blame the omnipresence of the Government in architectural and urban matters. Though the postwar administrations had endorsed modern planning, they failed to understand it fully, and thus new projects were quickly downgraded from their original urban visions into mere squarish ensembles. The purpose of this section is to identify some key characteristics of French architectural culture at this time, and their effect on utopian or avant-garde design (the planning of the Paris region will be discussed in greater detail in Chapter 3).

The administrative and political groundwork for postwar reconstruction was laid during some of the more catastrophic German bombing raids around 1940. At that time, the damage was significant, especially in cities in the Loire valley. The new government installed in Vichy immediately responded by forming administrative organizations to plan and oversee reconstruction of buildings and *équipements*. Lucan is insistent on

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[80] Ross, *FastCars, Clean Bodies*, 4.

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beginning his survey of late twentieth-century architecture at this moment, because as he points out, the structures, policies, and even many of the personalities of the Vichy cabinets carried over to the postwar reconstruction ministries; as did many of the themes of the re-planning of the French territory.[81] Regionalism, decentralization, urban zoning, etc., were all concepts that were accruing political and cultural significance.[82] Even at this early date, a large chorus of voices was arising against uncontrolled urban growth, which would later be identified with the growth pattern (or lack thereof) of the American "megalopolis."

But it was after the liberation that the development of French planning and construction really got under way. In 1944, the *Ministère de la Reconstruction et de l'Urbanisme* (MRU) was created, and Raoul Dautry was chosen to head it. Though the national infrastructure (roads and industry) was the first priority, by the later forties, the

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[81] Jacques Lucan, *Architecture en France (1940-2000)* (Paris: Moniteur, 2001), 18. Lucan's is one of several new surveys of French modern architecture. See also, volumes 2 and 3 (of 3) of *L'architecture moderne en France* (paris: Picard, 1998-2001): Volume 2: Joseph Abram, *Du chaos à la croissance, 1940-1966*, and Volume 3: Gérard Monnier, *De la croissance à la compétition, 1967-1999*. These recent surveys add to a small body of general literature, such as Gerard Monnier's earlier, but still very helpful, *Histoire critique de l'architecture en France, 1918-1950* (Paris: Philippe Sers, 1990), Lucan's earlier version of *Architecture en France, France Architecture, 1965-1988* (Paris: Le Moniteur, 1989), and the classic text by Maurice Besset, *Nouvelle architecture française* (Teufen, Arthur Niggli, 1967). A bilingual edition was published as *New French Architecture*, trans. James C. Palmes (London: Architectural Press, 1967). In general, within these works, we can see a movement from the polemics of contemporaneous commentary in the work of Besset, to a much more innocuous thematic approach in Lucan and Abrams, for instance. The work of the latter authors is arranged chronologically, and subdivided by building typology and stylistic trends. Lucan tends to have more developed discussions of cultural developments and their impact on architectural practice. As regards Spatial Urbanism, both authors treat the subject as an interesting but ultimately trivial parenthesis in the history of French modernism: something that interested the students until they discovered Foucault (this is not necessarily false, but obviously, I want to enlarge the parenthesis).

[82] See, for instance, Gaston Bardet, *Problèmes d'urbanisme* (Paris: Dunod, 1941); Jean-François Gravier, *Paris et le désert française* (Paris: Flammarion, 1947).

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designs for the reconstruction of major cities were being considered. Among all the administrators and officials running the ministry and its (many) committees, subcommittees, and departments, it was also possible to find many architects acting as consultants. Among them were Le Corbusier, August Perret, André Lurcat, and many others.

This was, as in many European countries, a time of abundance for State architectural commissions. Not surprisingly, many architects saw it as a great opportunity for a more or less complete renovation of the urban landscape. From this point of view, promising things were happening between 1945 and 1955: Auguste Perret at Le Havre, André Lurçat at Mauberge, and Le Corbusier's *Unité d'Habitation* in Marseille.[83] There was, however, never a lack of dissenting voices to these modernist initiatives. Many architects, local politicians, and the *sinistrés* (the victims of the destruction) often found themselves somewhat suspicious of the new schemes and buildings. Clearly, the politics of local tradition and cultural memory were already in play.

Nonetheless, it was a time of great experimentation. New materials, new construction techniques, etc., were developed, tried, and exhibited. Immediately following the liberation, a host of exhibitions began. The first was held in 1945 at the *Gare des Invalides*, and was devoted to reconstruction techniques.[84] In 1946, the *Exposition des techniques américaines de l'habitation et de l'urbanisme, 1939-194X* that

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[83] This group of projects is cited as the major set of modernist reconstruction plans in the forties and fifties, in: Lucan, *Architecture en France*, 47-57; and Joseph Abram, *Du chaos à la croissance*, 28-54.

[84] See Lucan's discussion of these exhibitions: Lucan, *Architecture en France*, 37-39.

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took place at the Grand Palais already signaled the impact of American culture, and the Marshall Plan specifically.[85] In 1947, the important urban commentator Robert Auzelle organized the *Exposition internationale de l'urbanisme et de l'habitation*, also held at the Grand Palais, which acted as a launching pad of sorts for various urban programs in France.[86] In 1948, the annual *Salons des arts ménagers* resumed (after a war-time hiatus), and became the premier venue for everything from new industrialized building techniques, to new toasters.[87] As Ross points out, attendance in the 1950s at these *Salons* had reached incredible numbers. These events became the Mecca of French domestic modernization.[88] This was also the period in which Jean Prouvé, for instance, exhibiting widely at these venues, came to prominence as a structural consultant and collaborator on so many new projects.

I have evoked this more experimental aspect of French reconstruction and modernization because it is in this context that one can find the first works of many of those designers who went on to participate in the utopian discourse of the sixties. Ionel Schein's *Maison en Plastique* was exhibited at the 1956 *Salon des arts ménagers*, and was the first ever prototype house made entirely of plastics (1955-1956, in collaboration

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[85] See Jean-Louis Cohen, *Scenes of the World to Come* (Paris: Flammarion, 1995), 173-175.

[86] Lucan considers this the most important event of these years: Lucan, *Architecture en France*, 38-39.

[87] The annual catalogue of the *Salons des arts ménagers* was called *Formes Utiles*. This was also the title of André Hermant's important book (that derived from the *Salons*): *Formes utiles* (Paris: Éditions du Salon des Arts Ménagers/Vincent Fréal et cie, 1959). The oft-repeated credo of the *Salon* is interesting to note here: "Sont utiles (et belles) les formes qui manifestent l'accord entre les exigences de la matière et les aspirations de l'esprit." ("Those forms are useful [and beautiful], which manifest the accord between the exigencies of material and the aspirations of the spirit.")

[88] Ross, *Fast Cars, Clean Bodies*, 87.

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with Yves Magnan and Réne-André Coulon),[89] a project contemporary with Alison and Peter Smithson's plastic *House of the Future* (1956) [Figs. 1.4, 1.43]. Schein would continue working on the idea of prefabricated and portable plastic dwellings throughout the fifties [fig. 1.44]. The following year, Nicolas Schöffer exhibited his *Maison à cloisons invisibles* (1955) at the *Salon des travaux publics* in Paris [Figs. 1.45, 1.46]. This project, completed with the sponsorship of the Philips electronics company and the manufacturer Saint-Gobain (with whom, ten years later, Michel Ragon would hold the first GIAP exhibition), was an eccentric house design. With a floor plan roughly in the form of a keyhole, the interior of the space was segmented, not with solid walls, but with light and temperature variations—hot, cold, blue, red, etc.. Both of these examples give an indication of the climate at this time, in which there were surprising alliances being formed across the boundaries of the public, private, and avant-garde realms.

But, as the fifties wore on, major changes were afoot. Politically, of course, 1958 marked the return to power of General de Gaulle, and the beginning of the Fifth Republic. Construction and urban development underwent a concurrent change. Also in 1958, the "zones à urbaniser en priorité" or ZUPs were created. These were areas marked out for fast, modern urban development, usually in the form of mass housing projects. Although new towns had been initiated before this date, it was really at this moment that the speckling of the French suburbs and countryside with ubiquitous boxy towers and slabs began. Moreover, these new projects were no longer addressing the

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[89] The *Maison en Plastique* project was sponsored by *Charbonnages de France* and the *Houillères du Nord* (coal industries), and received widespread and enthusiastic attention at the 1956 *Salon*. See: "Breakthrough for Plastics; First All-plastics House is a French Experiment," *House and Home* 9 (April, 1956): 216-217. "L'emploi des matieres plastiques dans la construction," *L'architecture d'aujourd'hui* 28 (September, 1957): xix.

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pressing needs of postwar reconstruction, but the relatively new needs of a growing urban population, created by exodus from the countryside, and immigrants from the colonies, especially North Africa. Additionally, these developments also coincided with significant economic growth, as they occurred in the middle of the *trente glorieuses*, that seemingly magical period of economic growth stretching from the end of the occupation to the oil crisis in the early seventies.[90] As Evenson points out, the *grands ensembles* were a "problem of prosperity."[91] As was their placement in the territory relative to the urban center, insofar as they often presupposed the use of a car to commute into the city.

The year 1958 really initiated what would become the characteristic architectural and urban developments of the 1960s: the construction of a seemingly infinite number of *grands ensembles* and government master plans for regional management. This was also the moment when Paris became the focus of urban attention, because it was to this epicenter that everyone seemed drawn, and which called for the most planification. And thus began a decade defined by a dearth of architectural masterpieces, and an abundance of controversy and upheaval.

Bracketed by the totalizing urban schemes of *Chandigarh*, *Brasilia*, and *Paris parallèle* at one end, and the cultural "empty center" of *Beaubourg* at the other, it is difficult to describe the architectural sixties in France in terms other than "transitional" or "interstitial." It is impossible to identify a singular theme or rallying point during this period, other than revolt. Even then, the effects of the cultural revolt on architectural

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[90] See, for instance, Robert Gildea, *France since 1945* (Oxford, New York: Oxford UP, 1997), 79-94.

[91] Norma Evenson, *Paris: a Century of Change, 1878-1978* (New Haven: Yale UP, 1979): 241.

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discourse are uncertain, and never produced a singular result. However, the period is marked by one fascinating fact: the fates of public policy on the one hand, and of avant-garde production on the other, were profoundly intertwined during this tumultuous decade. This is not to say that the two were absolutely identical, but that they had a common source (the postwar celebration of new technologies), and many commentators would identify them more and more with one another towards 1968.

Somewhere in the middle of this dynamic, we find the major figures in mainstream French architectural practice—the old students and apprentices of Perret and Le Corbusier who were now becoming names in their own right. Eugène Beaudouin, Marcel Lods, Serge Menil, Pierre Vago, André Wogensky, Jean Balladur, André Bloc, Raymond Lopez, Henri Pingusson, Éduard Albert, etc., were incredibly prolific and influential. Through built works, and from the seat of the important journal *L'architecture d'aujourd'hui*, the doctrines of heroic modernism were disseminated and adapted to the postwar cultural landscape. Clearly, the reigning mood was a distinctly Miesian predilection for cubic forms and refined surface expression—what Lucan describes as a "classical" modernism[92]—combined with the new postwar concern for the urban ensemble, fabric, or continuum.

But, as elsewhere in the world, modern architecture in France displayed a diversity of tendencies in the fifties and sixties. At one end of the spectrum, we find aesthetic elegance and technical innovation, as in Raymond Lopez's *Caisse centrale d'allocation familiales* (1952-1959), highly praised for its use of pilotis that left the ground floor open to circulation, its light steel frame, and pioneering use of translucent

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[92] Lucan, *Architecture en France*, 94.

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polyester cladding [fig. 1.47]. Jean Balladur's office *paquebot* on the rue de la Victoire (1956-1958), the first truly curtain-walled building in Paris, retains its sense of purity and the "classical modernism" described by Lucan [fig. 1.48]. Henri Vicariot's new terminal at Orly Airport (1956-1961) was probably the closest thing Paris had to a Skidmore Owings and Merrill building [fig. 1.49].

There were also bold structural experiments carried out. Albert's residential tower on the rue Croulebarbe (mentioned above) is one such example, as was his monstrous, modular university science building at Jussieu (1963-1972) [fig. 1.50] (as of this writing, slated for demolition). Reinforced concrete shells were also garnering much interest, because of their structural and aesthetic properties. By far the most famous example was the CNIT building (1953-1958) in the development of *La Défense*, by Robert Camelot, Jean de Mailly, and Bernard Zehrfuss, with the façade and glazing designed by Prouvé [fig. 1.51]. Though many felt the competition did not result in the best selection, the giant shell, and sublimely huge space produced inside the CNIT exhibition center became symbols of the modernization of Paris. There was also in France at this time a distinct taste for the use of space frame structures, to which I have devoted a section in Chapter 4, and for more on the *La Défense* development itself, see Chapter 3.

Eventually, the seeming monopoly of glass and steel construction gave way to Brutalist tendencies. The very early examples of Le Corbusier's *Unité d'habitation* in Marseille (1945-1952) [fig. 1.52], the *Maisons Jaoul* in Neuilly-sur-Seine (1952-1955), and the buildings at Chandigarh, India (1951-1954), etc., were followed by a steady stream of projects into the sixties. Le Corbusier's follower André Wogensky carried on

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his tradition in buildings such as the *Necker Hospital Center* (1963-1965), located not far from Lopez's *Caisse centrale*, which was an essay in concrete refinement and at least an attempt at a synthesis of the arts, with concrete sculptures by Marta Pan in the courtyard. Later, Jean Renaudie would produce some of the more successful rough concrete buildings to be found in the Paris area, especially in Ivry-sur-Seine. The mega-sizing tendency of Brutalism was also embraced, as were its urban tenets, in projects such as the ZUP *Toulouse le Mirail* (1961-1974) by George Candilis, Alexis Josic, and Shadrach Woods, which was conceived as a sophisticated urban web based upon the principle of the "stem." These ideas, which were unfortunately compromised as the development was realized, reflected Candilis, Josic and Woods earlier participation in the activities of the CIAM offshoot, Team 10 (see above).

Seen from within the narrow confines of the architectural discipline, there was much diversity in Parisian and French building. The transparency of Mies coexisted with Brutalism, and industrial technology was often synthesized with expressionistic aesthetic gestures. From outside the discipline, however, these subtle differentiations were not perceptible. For every isolated architectural success, for every *Maison de la radio* [fig. 1.53], there were ten or so *Maine-Montparnasse*s [fig. 1.54], or projects that inspired vehemence and hatred among the public, press, and professional architects alike. Besides Maine-Montparnasse, the controversial development of a major train and Metro station in the 15th Arrondissement, we think of the destruction of Victor Baltard's cast iron "umbrellas" in the heart of Paris: the vast marketplace of Les Halles, destroyed in 1971, and then (mis) managed by Ricardo Bofil, et al., and hosting Renzo Piano and Richard Rogers's *Centre Pompidou* (1973-1977) (see Chapter 5). For the most part, however, the

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works that inspired the most hatred were the suburban housing and urban projects. Here, in the public reaction to *grands ensembles* like *Sarcelles*, the social ramifications of the government's adoption of the modern style were becoming apparent.

The *Sarcelles* phenomenon deserves some mention here, as it encapsulates all the problems of the public and intellectual reception of modern architecture and planning in France at this time. There were many other controversial and despised developments in and around Paris, but *Sarcelles* was the archetype [Figs. 1.55, 1.56]. A massive ensemble of about 10,000 dwellings, construction at Sarcelles spanned the entire decade of the sixties. It was designed by Roger Boileau and Jacques-Henry Labourdette. Ground was broken in 1955, and the first inhabitants began moving in around 1957. Construction continued until the early seventies. The look of the ensemble was not atypical—rectangular low-rise structures for commercial and community functions defined public spaces (pedestrian streets and green areas), and this "fabric" was dotted with residential high-rise towers of 16 stories.[93] These towers were placed at regular intervals along the urban grid. Again, this was a typical urban layout, designed for efficacy of construction and circulation, etc.. But the perspectives thus created had a catalyzing effect; the sight of long parallel rows of identical blocks and towers would come to be synonymous with the " inhuman" environments of the *grands ensembles.*[94]

By 1969, it was estimated that one in six Parisians lived in *grands ensembles.*[95] Their impact on life in the sixties in France was profound. They stood as testaments to

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[93] The term "fabric" is used to describe this layout by Joseph Abram, *Du chaos à la croissance*, 136.

[94] See Evenson, *Paris: A Century of Change*, 245-249.

[95] Evenson, *Paris: A Century of Change*, 238

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both State paternalism and the modernist legacy of the twenties. In the popular press the new developments were predictably sensationalized. They were the bastards of the unfortunate crossbreeding of socialist urban ideas and capitalist commuter culture. They were seen as bastions of ennui and breeding grounds for social perversion and mental illness.[96] The *grands ensembles* demonstrated the effects of what could happen when the most immediate material needs of a population were provided, but its larger, more qualitatively defined social needs were neglected.

In 1960, the philosopher and sociologist Henri Lefebvre began his own intellectual engagement with the *grands ensembles*, inaugurating a decade of theoretical criticism of modern urbanism. Lefebvre and many others began systematically analyzing the built environment—teasing out of its daily reality the machinations of ideology as they were developing in what many would have called the second phase of the industrial revolution, in which the ordering of urban space was analogous to, for instance, the ideological function of the division of labor in the Nineteenth Century. This widespread intellectual engagement with architecture and urbanism was as important as the sensationalist campaigns run in the popular press in terms of galvanizing public opinion in the years leading up to 1968. Lefebvre's rich analysis of the new town of Mourenx, a private ensemble of workers housing built by a petrochemical company, clearly also had an influence on the Situationists, with whom he was associated at the time.[97] For them,

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[96] The popular reception is well documented. See Henry Canacos, *Sarcelles, ou le béton apprivoisé* (Paris: Éditions Sociales, 1979); Jean Dubuisson, "Ces ensembles qu'on voulait grands," *Les Années 1950* (Paris: Éditions Centre George Pompidou, 1988), 530-534.

[97] Henri Lefebvre, "Les nouveaux ensembles urbains," *Revue française de sociologie* 1, no. 2 (April-June, 1960): 186-201. In this important article, Lefebvre criticizes the very sociological models employed in developing housing developments like Mourenx. This

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new towns like Sarcelles and Mourenx revealed the "degree of the conditioning exercised over the worker" by private corporations and the state. This observation was then extended: "In Brasilia, functional architecture reveals what it really is, in its full development—the architecture of functionaries, the instrument and the microcosm of the bureaucratic *Weltanschauung*."[98]

But the radical Marxist interpretation of new planning projects was not the only critical stance one could take in the sixties. Negative views of the *grands ensembles* were essentially de rigueur in the academy at this time, and one finds them in a wide variety of sources. One key example is that of the eclectic and brilliant philosopher Gaston Bachelard, whose seminal text, *La poétique de l'espace* (1958) is, among many other things, an implicit critique of modern architecture and planning—even though he only invokes the theme once in the entire book.[99] It is clear, however, that Bachelard's phenomenological poetics of dwelling, dreaming, and inhabitation, simply had no place in the "superimposed boxes" of modern urban architecture. For Bachelard, these tightly-packed, rootless buildings were "oneirically incomplete."[100] They provided no intimate spaces for reverie—for the personal and poetic experiences of darkness, fear, or

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"operative" or positivistic sociology, he argues, fails to be able to deal with non-quantifiable phenomena such as boredom. I discuss Lefebvre's engagement with architecture in France at this time more fully in Chapter 2. Mary Mcleod also discusses Lefebvre's and the Situationists's reading of Mourenx in "Henri Lefebvre's Critique of Everyday Life: An Introduction," in Steven Harris and Deborah Burke, eds., *Architecture of the Everyday* (Princeton and Yale: Princeton Architectural Press and Yale Publications on Architecture, 1997.

[98] These passages come from "Critique de l'urbanisme," *Internationale Situationiste*, no. 6 (August, 1961): 9. My citations are from the facsimile edition of the journal (Paris: Arthème Fayard, 1997), 207.

[99] For the influence of Bachelard's text on architecture see: Joan Ockman, "The Poetics of Space," *Harvard Design Magazine* (Fall, 1998), 79-80.

[100] Bachelard, *Poetics of Space*, 26.

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childhood memories, "and what is quite unthinkable for a dreamer of houses, sky-scrapers have no cellars."[101]

Novels and film also had their own criticisms of the modern city. The novels of Christiane Rochefort and novels and essays of Georges Perec are the most seminal examples in this regard.[102] In cinema, Jacques Tati produced subtle and extremely complex comments on the impact of modern architecture and the automobile on daily life, in movies such as *Mon oncle* (1958), *Playtime* (1967), and *Traffic* (1971). *Playtime* especially was a poignant (yet hilarious) lament for the loss of Paris itself, to destructive forces that effaced regional and cultural specificity.[103] In one scene, the protagonist (played by Tati) is hosted by an old friend in his new modern apartment—a kind of glass and steel fish bowl—and a brilliant exterior shot captures the friend's apartment, as well as the abutting apartment of his neighbor (an identical copy). The mirrored interiors mock each other each other by their utter sameness, and simultaneous alienation. The image calls to mind a passage from Rochefort's *Les petits enfants du siècle* in which the main character, a young girl named Josyane, describes the *grand ensemble* in which she lives:

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[101] Bachelard, *Poetics of Space*, 27.

[102] Christiane Rochefort, *Les petits enfants du siècle* (Paris: Grasset, 1961). Trans. as *Children of Heaven* (New York: David Mckay, 1962). Georges Perec. *Les choses: une histoire de les années soixante* (Paris: René Julliard, 1965). Trans. David Bellos as *Things* (Boston: Godine, 1990). George Perec *Espèces d'espaces* (Paris: Galilée, 1974).

[103] On Tati's films and modern architecture see Joan Ockman, "Architecture in a Mode of Distraction: Eight Takes on Jacques Tati's *Playtime*," in Mark Lamster, ed., *Architecture and Film* (Princeton: Princeton Architectural Press, 2000), 170-195. See also, Laurent Marie, "Jacques Tati's *Play Time* as New Babylon." in Mark Shiel and Tony Fitzmaurice, eds.. *Cinema and the City: Film and Urban Studies in a Global Context.* Oxford: Blackwell, 2001.

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> At night the windows would light up and inside there were only happy families, happy families, happy families. Going by you could see them beneath the ceiling bulbs, through big windows. One happiness after another, all alike as twins, or a nightmare. The happinesses facing west could look out of their houses and see the happinesses that faced east as if they were seeing themselves in a mirror.[104]

The *Nouvelle Vague* director Jean-Luc Godard also returned to the theme of the destruction of Paris, the oppressive nature of modern architecture, and car culture again and again in films such as, *2 ou 3 choses je sais d'elle* (Two or Three Things I Know about Her) (1967), *Alphaville* (1965), and *Week End* (1967). *2 ou 3 choses je sais d'elle* especially is a chronicle of the social impact of the re-devleopment of Paris and the *boulevard péripherique* as it was built. Indeed, the "elle" of the title refers both to the female protagonist of the film—a housewife living in a *grand ensemble* who becomes a prostitute—and the city itself. Both appear in Godard's film as victims of State paternalism and consumer culture in equal measures. But although Godard's social commentary in this movie seems clear, his engagement with modern architecture is more ambivalent than, say, Tati's. One formal aspect of the New Wave was its predilection for a certain concrete abstraction, and Godard uses the architecture featured in the film strategically and formally to produce incredibly rich, if not beautiful, images of the repetitive façades of the *grands ensembles* he is ostensibly denouncing.

Nonetheless, the broad outlines of the popular and intellectual reception of modern architecture and planning in France are quite clear. The original conceptual and aesthetic foundations of modernism—clarity, rationality, standardization—were perceived as tools of some higher power—be it the State, or some ideological entity such as American cultural imperialism. The *grands ensembles* were seen as monotonous,

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[104] Rochefort, *Children of Paradise*, 58. This passage is also quoted by Evenson, *Paris: A Century of Change*, 241.

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inhuman, and devoid of any real cultural life. Like the concentration camps (a common metaphor at the time) they segmented time and segregated space with the arbitrary efficiency of a bureaucratic machine whose only identifiable goal was oppression.

While this situation was fairly cut and dried, what was the reaction of architects who were both implicated by this negative reception, yet dependent upon the abundant commissions in and around Paris? Quite clearly, defending the situation as it stood was out of the question. Most came to view the development of modern architecture and planning in the postwar period in France as a series of unfortunate compromises. The ideals of the interwar avant-garde (Le Corbusier particularly) had been betrayed via their *partial* adoption. The results were mere empty shells—building sites that only superficially resembled truly modern design. Most blamed the lack of vision on the Government and/or the private contractors who handed out the commissions.

Attacks against the overly-complex and nepotistic system of Government commissions and construction approvals were not in short supply among architects. One of the most famous came from Raymond Lopez, who was himself a prolific architect and urbanist in Paris. His book *L'avenir des villes* (1964) contains a lengthy and quite hysterical account of the Kafka-esque procedures involved in any State commission.[105] But these criticisms, because they more or less parallel (albeit with more insight) those of the popular press, do not interest us so much here as the proposed remedies. How did architects defend their positions and their professions in this hostile climate? For Lopez, and for many others, especially those on the board of *L'architecture d'aujourd'hui*, what was needed was a more comprehensive and inclusive philosophy of planning and

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[105] Lopez, *L'avenir des villes*, 11-14.

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building. State patronage would remain necessary of course, but it would have to stop segmenting the urban territory into discrete units, or individual plots and sites. The *grands ensembles* were failures, not because they were architecturally inadequate, but because they were urbanistically isolated—cut off from the cultural animation of the true city.

The result was a "sick" city—a congested, dispersed, chaotic agglomeration that failed to provide the kind of services that were promised by modern technology and knowledge. This urban "dis-equilibrium" had to be treated at the infrastructural level, with the help of a paradigm that included not only architectural design, but a new conception of the urban fabric of circulation and exchange.[106] For modernists like Lopez, the lost potential of modern design and building was signaled by the incredible success of private industry. Because the private sector had so many resources, and such a clear model of what it wanted to achieve (production and distribution of goods, greater efficiency of techniques, etc.), it had attained an incredible level of efficiency and success. For Lopez, it was absurd that private industry could run as successfully as it did, based upon the logic of organization, and yet the city could not attain a similar level of equilibrium of its respective parts and functions. As indicated above, one concrete remedy to this situation that was proposed by Lopez, and by Persitz, for instance, was the model of Spatial Urbanism, in a more or less radical form. This would allow for the spatial re-integration of the urban functions, thus easing the chaos and imbalance of city life.

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[106] Lopez, *L'avenir des villes*, 65-74.

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However, the architectural establishment suffered from more than simply a harsh social climate during the sixties. This was also a time of internal crisis within the discipline itself. By the sixties, architecture and especially urbanism seemed far *en retard* relative to other disciplines, like the social sciences, which were progressing by leaps and bounds at this time, through the development of statistical methods, data storage, etc.. As in many other countries, crossing disciplinary boundaries was seen as one remedy to this situation. Teams of architects and other specialists (most often sociologists) were brought together to redress the various shortcomings of architectural design.[107] The perceived technological lag and disciplinary isolation of architectural practice deserves further comment here.

How do we account for the apparent stagnation of architectural practice during the sixties, relative to the incredibly dynamic development of intellectual life at the same time? Especially when one looks at the social sciences in France during the sixties, it is astonishing that more alliances were not formed between disciplines, or at least that more evidence of some kind of influence is not apparent. The rise of Structuralism in the academy is a case in point, and one to which I will return in the final chapter of this study. The ubiquity of this term and its attendant theories, which influenced many fields, from anthropology to linguistics, philosophy, history, psychoanalysis, and literature, somehow only rarely appeared in architectural discourse.

[107] For a discussion of inter-disciplinary team design in the sixties in France, see Lucan, *Architecture en France*, 168-169.

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Jean-Louis Cohen has gone so far as to describe this situation in terms of French architecture's "chauvinism" and "anti-intellectualism."[108] He describes the hermetic quality of architectural practice as a twofold phenomenon: there was a sense of isolation from architectural developments in other countries, and an interior isolation that defined architecture's distance from other intellectual enterprises in France. Pierre Le Dantec was even harsher in his judgment of the French context, which protected itself from outside influence, even before World War II, because of its "little Pétainist *terroirs* and religion of 'art for art's sake.'"[109] For Cohen, the omnipresence of the French administration (which was still based upon highly centralized and complex bureaucratic structures established in the 17th and 18th Centuries), the hegemony of the journals *L'architecture d'aujourd'hui* and *L'architecture française*, and the huge delays (if they were translated at all) that accompanied the translations of major texts from other countries into French resulted in France's isolation from foreign influences. Françoise Choay supports this view: "[a]nd if, since the end of the 1970s, mainly thanks to Belgian publishers, the first translations of G.C. Argan, A. Blunt, H.R. Hitchcock, and N. Pevsner have finally seen the light of day, at the moment I write this [1985], not one line has yet been published in French of any of the works of three of the most important historians of architecture: P. Frankl, R. Krautheimer, and R. Wittkover [sic]."[110]

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[108] Jean-Louis Cohen, "La coupure entre architectes et intellectuels, ou les enseignements de l'italophile," *In Extenso*, no. 1 (1984): 72.

[109] Jean Pierre le Dantec, *Enfin l'architecture* (Paris: Autremont, 1984), 39.

[110] Françoise Choay, "Production de la ville, esthétique urbaine et architecture," in Georges Duby, dir., *La ville aujourd'hui*, volume 5 of 5 of *Histoire de la France urbaine* (Paris: Seuil, 1985), 240.

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Cohen also lingers on the internal isolation of French architecture from the great cultural and academic movements that shaped the intellectual life of France during the 1950s and 1960s: namely Structuralism, Marxism, and Post-structuralism.[111] For Cohen, the exceptional incursions of these disciplines into architectural discourse serve only to prove the rule of its ultimate isolation. He observes that the influence of intellectual movements like Structuralism are really only evident in the work of non-architect intellectuals who turned their attention to architecture, like Hubert Damisch, and Pierre Francastel.[112] One exception to this rule that Cohen cites is the writing of the architect Philippe Boudon. I would add Choay's own prescient adoption of Structuralism, as early as 1965, in her definition of a new approach to urbanism.[113]

Of course, the disciplinary and cultural-geographical isolation of French architecture was about to be absolutely inverted in the aftermath of 1968, when interdisciplinarity would become the rule for architectural discourse. The events of May '68 constituted a true crisis for French architecture, and retrospectively color any historical treatment of the sixties.[114] But while the causes of the crisis within the discipline were clear, the actual impact of post-68 reforms and initiatives is less so.

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[111] Cohen, "La coupure," 68.

[112] Cohen, "La coupure," 68-72.

[113] See Françoise Choay *L'urbanisme: Utopies et réalités, une anthologie* (Paris: Éditions du Seuil, 1965), and "Sémiologie et urbanisme," *L'architecture d'aujourd'hui* 38, no. 132 (June-July, 1967):, 8-10.

[114] My account of the events here is concerned exclusively with the impact of architectural practice. For a more general account of the revolt see: Maurice Larkin, *France Since the Popular Front* (New York: Oxford UP, 1997), 317-336; Angelo Quattrocchi and Tom Nairn, *The Beginning of the End* (London: Verso, 1998).

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Whatever these were, they emanated from the epicenter of crisis: the *École Nationale Supérieure des Beaux-Arts*, Architecture Section.

More than just an antiquated school, the ENSBA was a vast system linking students to professors, to contractors and government agencies. In a profound sense, the institution dictated not just the architect's formal education, but also his future career. If there was a single cause for the outmoded and stagnant state of French architecture in the sixties, it was the "militant anti-intellectualism" of the ENSBA.[115] To begin with, architects were given inadequate tools for contemporary design. The detached formalism of the school's pedagogical philosophy had remained intact since the previous century. The old system of ateliers with elected professors provided the appearance of autonomy, while still regulating advancement and "grades." Likewise, the professional arena of competitions and commissions was tainted by the network of professional and government contacts and favors generated by the school.

No one was less happy with the situation than the students themselves. Their protests and calls for a more socially engaged and practical curriculum were only partially addressed during the early to mid-sixties, with weak reforms instituted by the administration. Clearly, these steps were inadequate, and the events of May 1968 were to prove to be the springboard for the ultimate closing and dismantling of the Architecture Section.[116] Before 1968, it is evident that the students had to look outside the confines of the school in order to keep themselves up to date with developments in the world of architecture and urbanism. This partly accounts for the initial success of the utopian

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[115] Roland Castro, quoted by Lucan, *Architecture en France*, 197.

[116] For a general account of these events, see Lucan, *Architecture en France*, 187-200.

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designs published by Ragon, et al. These images presented a radically different view of architecture than what was available within the halls of the ENSBA. They represented a visionary architecture that was more in tune with contemporary society, and that dealt in a more direct manner with social and technological issues. However, the perceived relevance of these projects would be severely questioned in 1968.

The most direct and immediate consequences of May 1968 on architecture could be seen in the educational system. However, it should be mentioned here that the pressure to move towards interdisciplinarity at the ENSBA was heeded prior to May, in 1965, with the creation of three supplementary courses or groups of students who enrolled in a "Critical History of Contemporary Architecture,"[117] thanks largely to the influence of the Candilis/Josic atelier. Interestingly, Ionel Schein headed one of these three groups in 1967, the so-called Group C. Schein would also go on to support the student movement and the most radical reforms in the post-68 reorganization of the school. All of these Groups included contributions from sociologists, and other specialists. But, after the strikes and the occupation of the building on the Quay Malaquais beginning on the 8th of May, these half-measures were fundamentally rejected by the students.

The complex course of events that ensued are beyond the scope of the present summary, however, the issues involved are of direct relevance.[118] After the riots themselves, later in 1968, the Ministry of Culture, headed at this time by André Malraux,

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[117] Lucan, *Architecture en France*, 197.

[118] The best overview of the events of May, and the reorganization of the ENSBA is Martin Pawley and Bernard Tschumi, "The Beaux-Arts Since '68," *Architectural Design* XLI (September, 1971): entire issue.

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refusing the students' and teachers' demands for integration into the university system, decided to totally decentralize the Beaux-arts into so-called *Unités Pedagogiques*. Five of these sections, comprising several hundred students each were formed in Paris, and another 13 were located in the provinces. By the early seventies, there were 8 *UPs* in Paris as a result of splinter groups (professors and students that formed their own *UP*s, usually for ideological reasons). The most famous of these was *UP* 6, which fundamentally refused the new organization, and maintained a high level of militant activity and social engagement in the form of protests, etc.. The Spatial Urbanist Paul Maymont formed his own small UP at this time as well: UP 7, which, according to Bruno Vayssière was quickly outmoded.[119]

Although most of the new *Unités* were largely perceived as carrying on the same dynamics of the ENSBA in an only slightly different form, the events of May, and the reorganization of architectural education in France signaled the end of what Cohen described as the "divide between architects and intellectuals."[120] The explosion of the curriculum was viewed by some as kind of "degree zero of knowledge in matters of architecture."[121] Afterwards, according to Antoine Grumbach, it became not an option, but a "necessity," to read, if not to attend the seminars of Lefebvre, Levi-Strauss, Barthes,

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[119] Bruno Vayssière, "Mégastructures," in *La ville: art et architecture en Europe, 1870-1993* (Paris: Éditions de Centre Pompidou, 1994), 424. Though Vayssière is quite rightly suspicious of the quality of Maymont's contribution as a pedagogue, Maymont remarked to me that, during May, 1968, his small group of students did *not* join the protests (interview with Maymont April 5, 2002).

[120] This is the title of Cohen, "La coupure...".

[121] Jean-Pierre Duport, introduction to *La recherche en architecture: un bilan international* (Paris: Parenthèses, 1986), 7.

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Foucault, Lacan, and so on.[122] In terms of new architectural influences, students and the younger generation of teachers and practicing architects had to look outside the French context. As early as 1967, there was growing interest in Robert Venturi, Christopher Alexander, Kevin Lynch, and Christian Norberg-Schulz, and increasingly, as Cohen argues, the influences--both theoretical and architectural--were coming from Italy as well.[123]

1968 also marked the nadir of the utopian designs of the sixties, and specifically that vague movement, Spatial Urbanism.[124] The Italian critic Manfredo Tafuri's damning critiques of the late sixties sealed the fate (at least for several decades) of these projects, which he described as an integral part of the society of technocracy and consumption of the sixties. It is nonetheless interesting to recount the role of these utopian designs in the French context before the crisis.

In a sense, utopian architecture suffered the same problems as mainstream practice during the sixties—anti-intellectualism and cultural isolation. Despite Ragon's success at courting outside specialists and foreign adherents to the ideas of the GIAP, Spatial Urbanism, and the French avant-garde more generally, effectively remained local

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[122] Antoine Grumbach, "Dix ans de recherche architecturale," in *La recherche en architecture*, 13.

[123] Cohen, "La Coupure," 74 ff.

[124] Although Abram devotes little space to the *prospective* projects of these years, he nonetheless concludes his book by referring to their waning significance: "[At the end of the sixties] the optimistic utopias of urban expansion (the 'Cybernetic City' of Nicolas Schöffer, the 'bridge-cities' of Yona Friedman, 'floating cities' of Paul Maymont, 'total city' of Jean-Claude Bernard, 'Spatial Urbanism,' the 'flower city' of Lionel Mirabaud and Claude Parent) significantly lost their credibility among the younger generations. Architecture thus entered a professional identity crisis, which expressed itself, marginally, but nonetheless powerfully, in the end of the École des Beaux-arts and the demand for the adoption of new *Unités Pedagogiques* in university architectural education."; Abram, *L'architecture moderne*: 289.

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phenomena. The same held true for that other major avant-garde group in Paris in the mid-sixties, Architecture Principe. This was illustrated in a humorous episode reported in the official publication of the student league of the ENSBA, by Bernard Huet, who would go on to become a participant in *UP* 6 (though he later abdicated), one of the champions of postmodernism, and an editor at *L'architecture d'aujourd'hui*. Huet was reporting on the 1966 International Dialogue of Experimental Architecture (IDEA) in Folkstone, England, organized by the British group Archigram. Huet's commentary is revealing, because it gives us some insight into the position of the French avant-garde relative to that of other countries, and it also indicates the ENSBA students' reception of French "visionary" architecture. The only French participants were Yona Friedman, and the group *Architecture Principe*, including Claude Parent and Paul Virilio. From Huet's report:

> The evening of the 10th [of June] was occupied by Yona Friedman. It was a success for him, and it is necessary to recognize the merit of his defense of certain conceptions close to those of Christopher Alexander, although he thinks it necessary to utilize a psuedo-mathematical vocabulary of a disarming naïveté in order to justify several formal ideas, which in the end are quite limited. Moreover, during the course of the discussion that followed [his presentation] he revealed himself to be very vulnerable and preferred to avoid very precise questions.[...]
>
> The morning of the 11th ended badly. It concluded with Claude Parent. How can one imagine a link, however tenuous, between the preoccupations of most of the participants and his group?
>
> At first, the audience thought it was a joke, and found it quite funny, until they became annoyed with the fascist metaphysical mumbo-jumbo of the members of the Principe group, and it became clear that Parent and Virilio were taking themselves seriously.
>
> Faced with this display of retrograde formalist and reactionary ideas, the participants refused to engage in any debate.
>
> It was the only incident of the two days, and it is regrettable that France was in the middle of it.[125]

[125] Bernard Huet, "Folkstone 1966," *Melp!* (*Melpomène*), no. 22 (July, 1966): np. The British reception of the Architecture Principe presentation was not much better. According to Robin Middleton, the two were vehemently attacked by Reyner Banham, and were described by Middleton as parading "around priestlike in Feruch-type suits ('Look, look, master, here come two religious caterpillars'), but no 'sapient sutlers' these. They barked out their oration, a chapter

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This report is interesting because it really contains the seeds of the next few years of avant-garde architectural discourse in France. Friedman fared the best after 1968, among all his colleagues in Ragon's circle—his projects were open-ended enough that they could be appropriated in various circumstances. The events of May would lead to the split of the Architecture Principe group. And Huet would go on to become a great critic of the infrastructural modernism of the sixties, and to support the sophisticated Italian postmodernism of Aldo Rossi, et al. in the seventies.[126] The passage also reminds us of the basic truth that French avant-gardism suffered from the same problems of intellectual and cultural isolation that mainstream practice did. Again, Ragon was successful in creating a multidisciplinary atmosphere under the auspices of the GIAP, but the participating specialists tended to be positivists, and to maintain an operative view of their respective fields. By failing to enter into the critical atmosphere of the late sixties, Ragon was effectively precluding himself from any kind of meaningful participation in the ideological discussions of the time.

Gerard Monnier has recently provided a historical analysis of this period that can serve as a frame within which we can view these developments.[127] He argues that what he describes as the French "architecture of difference" (by this he means "more or less visionary" architecture) during the 1960s, was actually a doomed avant-garde. Because

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by turn, in the manner ordained for aspirants to *La Gloire*." Robin Middleton, "Folkstone IDEA," *Architectural Design* 36, no. 7 (July, 1966): 322.

[126] See Bernard Huet, *Anachroniques d'architecture* (Paris: Archives d'Architecture Moderne, 1981).

[127] Gerard Monnier, *L'architecture moderne en France: Tome III, de la croissance à la compétition, 1967-1999* (Paris, Picard, 2000), 55-56.

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of its technological positivism, its egalitarian and libertarian political views, and its failure to adapt to the new sociological thought of the late sixties (especially that of Lefebvre), it was distanced from significant developments in other countries, and was in the end unable to withstand the ideological pressures of May '68. Although I will argue in the final chapter of this study that this view is somewhat over-simplified, it serves to situate the French avant-garde and its failure to assimilate the critical rhetoric of the late sixties. (One significant exception to this rule was the pneumatic design of the young architects associated with the radical group Utopie, although, in the end, the ideological pressure proved too great for this alliance as well.[128])

In the early to mid-sixties, French utopian design had served the important function of providing ENSBA students with an alternative to the official curriculum. But, as Monnier suggests, it remained too implicated in the official culture of technology and planification to serve this purpose for very long. It is evident from the pages of the Architecture Section's student newspaper, *Melpomène*, that beginning around 1965 or 1966, the students still needed alternatives, but that they increasingly turned towards England or other sources for their inspiration; they celebrated the liberating potential of the psychedelia of Archigram, for instance. After 1968, in the context of the new *Unités Pedagogiques*, the sources to which they turned were increasingly theoretical and critical.

The Theorization of Space

Utopian architectural practice in France functioned for a time during the mid-sixties as one of the only viable alternatives to the limitations of professional practice and

[128] See Marc Dessauce, ed., *The Inflatable Moment: Pneumatics and Protest in '68* (New York: Princeton Architectural Press and the Architectural League of New York, 1999).

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official education. As we suggested above, another alternative was developing simultaneously, but would not be recognized as such until after May 1968. This development or, more properly, developments were taking place in the universities as more and more non-architects and non-specialists started thinking about architecture, the city, and space more generally. In fact, space would become one of the defining themes (if not *the* defining theme) of the social sciences in the postwar period—from bodily, phenomenological space (Bachelard, Merleau-Ponty), to the space of ideology (Lefebvre, Debord, Baudrillard), to the disembodied play of signs and signifiers in semiotic space (Barthes), to a new spatial conception of history and power (Foucault, Deleuze and Guattari). The sixties was a time of great ferment in which all of these writers were struggling with the great philosophical statements about space, place, and dwelling, from Leibiniz and Descartes, to Kant, Husserl and Heidegger,[129] and attempting to integrate them into, or refute them on the grounds of more recent intellectual developments such as Structuralism.

It is a striking fact that this incredibly intense activity was almost completely shielded from architectural practice (utopian and mainstream) and *vice versa* in France during the sixties. But this is not to say that there was no connection whatsoever. As we saw above, the contemporary state of the modern city was in many ways a spur to theoretical reflection. What were the social, psychological, and historical ramifications of the modern planning of the urban environment? Of course, the relationship between

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[129] Edward Casey provides an excellent summary of these concerns in the second half of his book: *The Fate of Place: A Philosophical History* (Berkeley: University of California Press, 1997). Though Casey is anxious to forge his own argument about the nature of Place, over and above a flat, lifeless modernist space, his thematization of space is extremely helpful, and I have relied upon it to a significant extent.

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social theory and actual building during the sixties was largely antagonistic. From Bachelard's "superimposed boxes" (see above) to Foucault's reading of Bentham's *Panopticon*, modernist, rationalist space was seen in an overwhelmingly negative light. But, more importantly, space (modern, urban space) was seen as both the result and/or symptom, and as one of the primary causes, or at least preconditions for contemporary alienation and ideological control.

There is, of course, no single source for the fascination with space in France in the sixties, but certainly one of the major sources for these developments was the social scientific trend or tendency that came to be known as Structuralism. More than just an academic development in the sixties, Structuralism was a social phenomenon of incredible proportions.[130] The term Structuralism is generally applied to the work of a diverse group of French intellectuals working in the 1950s and 60s. Vincent Descombes has called this loose amalgamation the "generation" of 1960 that attempted (and largely succeeded) in overthrowing the hegemony of phenomenological philosophy, and "engaged" social criticism *à la* Sartre.[131] Drawing upon modern philosophy and the human sciences that arose in the 19th and early 20th centuries—linguistics and anthropology—and to a lesser extent upon the hard sciences and mathematics, structuralism's influence continued long after its formal existence as a coherent

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[130] My description of Structuralism is taken from my own: Larry Busbea, "Structuralism," in *Encyclopedia of Twentieth-century Architecture* (Chicago: Fitzroy Dearborn, forthcoming). I would also refer the reader to the more comprehensive source: François Dosse, *History of Structuralism*, 2 vols., trans. Deborah Glassman (Minneapolis: University of Minnesota Press, 1997).

[131] Vincent Descombes, *Modern French Philosophy*, trans. L. Scott-Fox and J.M. Harding (Cambridge: Cambridge UP, 1980), 75.

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movement. In the most general sense, structuralism was the search for the most elementary and universal patterns underlying cultural reality—patterns and structures that form the basis of social life in its most fundamental expressions: language, economy, science, etc. Less doctrine than method, the basic tenets of structuralism were adapted to virtually every discipline in the academy.

Structuralism's search for the structures underlying perceived phenomena resulted in models that were inherently spatial and/or syntactical (as opposed to evolutionary, developmental, historical, or diachronic). The famous rhetoric about the "end of history" in the sixties can be traced to the overwhelmingly spatial or synchronic disposition of Structuralism. But, perhaps even more fundamental to Structuralism's method was the linguistic model. At the source of Structuralism was the anthropologist Claude Lévi-Strauss's adoption or adaptation of Saussure's linguistic science. Drawing inspiration from the Swiss linguist, Ferdinand de Saussure's *Course in General Linguistics*, Lévi-Strauss transposed human practices, myths and rituals into the spatial field of the signifier and the signified.[132] In the field of linguistics, Saussure's methods constituted a break with etymological studies of language, but for the development of French structuralism, the emphasis upon synchrony formed the basis for the later rejection of classical history, and the "spatialization" of human activities.

There is no place here to fully explore what happened in the French context—the "linguistic turn" of Structuralism had a profound impact on virtually every discipline (again, art and architecture are exceptions). But one thing seems certain: the "play of

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[132] Ferdinand de Saussure, *Course in General Linguistics*, trans. Wade Baskin (New York: Philosophical Library, 1959); see also Jonathon Culler, *Ferdinand de Saussure* (Ithaca, Cornell UP, 1986).

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signifiers" was understood synchronically, which is to say spatially as opposed to temporally, and this fundamental outlook must have inspired many to attempt to make the transposition from the "space of the signifier" to real world spaces, such as cities. As it happens, we have several examples of writings about urban space from some of the key figures of Structuralism and what came to be known as Poststructuralism: Roland Barthes, Jean Baudrillard, Michel Foucault, Gilles Deleuze and Félix Guattari, etc.. Again, a full analysis of any one of these writers would require a full length study, but for our purposes here it will suffice to make a few careful generalizations.

If one thing unites these very diverse theorists, and more specifically, their considerations of space and cities, it is that they came to view every aspect of urban existence as somehow systemic—as the product, or the producer (or both) of systems. The city could produce systems of knowledge and power, controlled spaces and more liberated spaces, and systems of signification. These systems were most often dynamic, and combinatorial—they had shifting terms of symbol and reference, or site and function (even though the mechanism of the relations between these terms remained constant).

Barthes went the furthest in describing the systemic nature of urban space in terms of Structuralism and semiotics, a relatively new "science" of signs of which he was one of the originators.[133] For him, the city was at a certain level, a vast structure of signs, of the free play of signifiers that could shift and change given different conditions. Shopping, transportation, civic buildings, pubs, all of the various "functions" of spaces

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[133] Roland Barthes, "Semiotics and Urbanism," in Ockman, *Architecture Culture*, 413-418. The essay was originally presented in Naples in 1967, then published in Italian the same year. It appeared in *L'architecture d'aujourd'hui* in 1970, and was translated into English by Richard Howard for Roland Barthes, *The Semiotic Challenge* (New York: Hill and Wang, 1988), 191-201. See Ockman's editorial comments in *Architecture Culture*, 412.

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were also "signs" that were "read" by the inhabitant or "user" of the city. The system of the play of urban significations necessarily transcended the fixed nature of urban functions and became a kind of poetics of signification for Barthes:

> We gradually discover that there exists a kind of contradiction between signification and another order of phenomena, and that consequently signification possesses an irreducible specificity. For instance, certain urbanists, or certain of those investigators who are studying urban planning, are obliged to note that, in certain cases, there exists a conflict between the functionalism of a part of the city, let us say of a neighborhood or a district, and what I should call its semantic content (its semantic power).[...] And this conflict between signification and function constitutes the despair of the urbanists.[134]

Barthes' recognition that semiotics and a traditional model of functionalism were incompatible was prescient. The functionalist demand that every element in a given system have a fixed referent (that every tool have its specific job) could not sustain a poetic conception of the modern city as a vast field in which significations were in constant flux, albeit a definable Structuralist flux. Increasingly, architects and urbanists themselves sought to find ways of expanding this old notion of functionalism—this explains the emergence of interdisciplinarity during the fifties and sixties. But they overwhelmingly still sought ways of fixing and defining social relations within a certain space, and their operative outlook could simply not account for Barthes' notion of the poetics or "erotics" of the dynamic space of signification of the city.

If Barthes saw Structuralism as a possible approach to understanding the city, Foucault saw it as a symptom of modernity itself. In his most famous and complete statement about urban space, he implies that planners are already Structuralists, and that the city is already figured in terms of Structural spaces and connections. For Foucault, modern man was interested primarily in spatial arrangements of urban elements:

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[134] Barthes, "Semiotics and Urbanism," 414.

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[Arrangement] is defined by relationships of neighborhood between points and elements, which can be described formally as series, trees, and networks.

> On the other hand, we know very well the importance of the problems of arrangements in contemporary technology: storage of information or of the partial results of a calculation in the memory of a machine; circulation of discrete elements to random outlets (automobiles, for instance, or even sounds transmitted over telephone lines); location of labeled or coded elements within a randomly divided set, or one that is classified according to univocal or multiple systems, etc.[...]
>
> In our era, space presents itself to us in the form of patterns of ordering.[135]

Foucault then went on to discuss two particular types of urban spatial arrangements—the utopian and the heterotopian; the former being totally ideal and the latter being a kind of subversive mixing of other types of actual arrangements (compatible and incompatible). Without delving too deeply into these models of spatial arrangement (or dis-arrangement), I want to stress here the way in which the Structuralist model is being rejected by Foucault. The heterotopia is an alternative to the functionalist arrangement of space in which everything is maintained in a perfect equilibrium. Though it isn't fully articulated in this 1967 essay, he is clearly in the process here of formulating a much more critical view of modern space, a view that will be most famously worked out in his reading of Jeremy Bentham's Panopticon in *Discipline and Punish* some years later.[136] In this "Heterotopia" essay he only allows himself to hint at the possibility that modern functionalist space is the space of the police state.[137]

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[135] Michel Foucault, "Of Other Spaces: Utopias and Heterotopias," (1967) in Ockman, *Architecture Culture*, 420-421.

[136] Michel Foucault, *Surveiller et Punir; naissance de la prison* (Paris: Gallimard, 1975) trans. Alan Sheridan as *Discipline and Punish* (New York: Vintage, 1979).

[137] Foucault, "Of Other Spaces," 426.

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But the generation of 1960 was not the only one detailing the ways in which the "arrangement" of urban space was problematic. Barthes and Foucault were representative of a new form of Structuralist, poetic critique, one born of the discourse surrounding, for instance, the founding of the literary journal *Tel Quel*, and which implied the rejection of Sartrian engagement and phenomenological bodily experience in favor of the opacity of the text (be it properly literary, or otherwise). Despite these newer developments, the Marxists were still active, and engaging in reflection about urban space. Of course, this was not the sterile, empirical Marxism of the Parti Communiste Francaise (PCF), but rather the "post" Marxism of Henri Lefebvre (see next chapter), Guy Debord, and Jean Baudrillard, and all of those associated with them in their respective cultural projects.

Throughout the sixties Guy Debord and the *Internationale Situationiste* were engaged in a bitter struggle with the mechanisms of what Debord would call the "Society of the Spectacle." An integral part of this society (and the Situationist critique) was the theme of the city, and of urban planning. Initially, the Situationists were very much involved in arriving at their own alternative methods of planning ("unitary urbanism" and *New Babylon*), but as the sixties wore on any productive method of arranging space seemed less and less likely, and Debord's attention was turned more towards critique than avant-garde production:

> Urbanism is the modern way of tackling the ongoing need to safeguard class power by ensuring the atomization of workers dangerously *massed together* by the conditions of urban production. The unremitting struggle that has had to be waged against the possibility of workers coming together in whatever manner has found a perfect field of action in urbanism. The effort of all established powers since the experience of the French revolution, to augment their means of keeping order in the street has eventually culminated in the suppression of the street itself.[...] But the general trend toward isolation, which is the essential reality of urbanism, must also embody a controlled reintegration of the workers based on

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> the planned needs of production and consumption. Such an integration into the system must recapture isolated individuals as individuals *isolated together*. Factories and cultural centers, holiday camps and housing developments—all are expressly oriented to the goals of a pseudo-community of this kind.[138]

In a passage like the above, Debord is directly engaged with the same themes of the Spatial Urbanists, albeit from the opposite ideological position. He is also distinctly at odds with the non-engaged criticism of commentators like Barthes. Though both sought to resuscitate the mythical figure of the *flâneur*, it is doubtful that Debord ever could have experienced the poetic pleasure of the city as a play of signifiers in the way that Barthes did.

Baudrillard was the most successful at merging these two apparently contradictory approaches, which I will call for simplicity's sake, the Structuralist and the Marxist. He adopted the notion of modern society as a vast field of signification, and then transposed that model onto the Marxist notion of commodity fetishism. Within this rather startling transposition, the status of design, functionalism, and the modern "object" was determinate. For Baudrillard, the passage from industrial commodity exchange to post-industrial sign/object exchange was marked historically by the advent of the Bauhaus:

> Not all cultures produce objects: the concept is peculiar to ours, born of the industrial revolution. Yet even industrial society knows only the *product*, not the *object*. The object only begins truly to exist at the time of its formal liberation as a sign function, and this liberation only results from the mutation of this properly industrial society into what could be termed our techno-culture, from the passage out of a *metallurgic* into a *semiurgic* society. That is to say, the object only appears when the problem of its finality of meaning, of its status and message and as sign (of its mode of signification, of communication and of sign exchange) begins to be posed beyond its status as product and as commodity (beyond the

[138] Debord, *Society of the Spectacle*, 121-122.

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> mode of production, or circulation and of economic exchange). This mutation is roughed out during the 19th Century, but the Bauhaus solidifies it theoretically.[139]

Baudrillard here rather violently forces the square peg of Marxism into the round hole of Structuralism, but he does so based upon the central notion of the functional object—a theme that would continue to preoccupy him in this, his "early" period of thought.[140] For Baudrillard, the object *cum* sign was always already integrated into the vast network or system of post-industrial society. It supplanted the "aura" of the pre-industrial object, and replaced it with the "atmosphere" of the designed environment, in which everything related to everything else, and only had significance within the circuit of this interrelationship.

It was inevitable that Baudrillard's notion of this "system" would be expanded to apply to the entirety of the built environment. For Baudrillard, the space that constituted the everyday environment had come to be shaped according to a combinatorial logic that originated in industry and management, and Structuralism itself:

> [T]oday objects do not respond to one another, they communicate – they have no individual presence but merely, at best, an overall coherence attained by virtue of their simplification as components of a code and the way their relationships are calculated. An unrestricted combinatorial system enables man to use them as the elements of his structural discourse.[141]

It is via Baudrillard's work, more so than the others discussed here, that we arrive at the question that this entire section has been begging: if architecture and theory suffered from the profound "*coupure*" that Cohen and others have suggested, or even a

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[139] Jean Baudrillard, *Pour une critique de l'economie politique du signe* (Paris: Gallimard, 1972), trans. Charles Levin as *For a Critique of the Political Economy of the Sign* (Telos Press, 1981), 195-203.

[140] The ultimate treatment of these ideas, of course, came in *The System of Objects*.

[141] Jean Baudrillard, *Le système des objets* (Paris: Gallimard, 1968), trans. James Benedict as *System of Objects* (London: Verso, 1996).

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pronounced antagonism, what relevance do they have to one another, and why has this exposition been necessary? I hope to be able to give at least a provisional answer to that question in the final chapter of this study. Suffice it to say at this juncture, that the charged historical relationship between French utopian architecture and what came to be known as French theory is intriguing. Both sides of this relationship held, as we have already seen, that the city was a kind of system—a massive machine for the production of objects, of signs, and of everyday life itself. The decade of the 1960s marked a moment in which battle lines were drawn around this system. The theorists we have been discussing here were (with certain exceptions) critical of the city/network, while the Spatial Urbanists were attempting to perfect it, to bring it to its ultimate social conclusions. This explains the rapidity with which the idea of megastructure was transformed from an avant-garde ideal to a technocratic nightmare.[142]

But in France, more so than elsewhere, this dramatic passage was not as complete, nor as total as it appeared from other vantage points. Certainly, we see a wholesale rejection of "visionary architecture" after 1968, and a collective embrace of semiotics, psychoanalysis, sociology, etc., but I will maintain that the infrastructures of Spatial Urbanism, and the ideas of integration that were, well, integral to them have a more interesting connection to the theoretical developments of the early seventies than is usually acknowledged. Above, I mentioned the ways in which the French utopian

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[142] See Sarah Deyong, "Memories of the Urban Future: the Rise and Fall of the Megastructure," in *The Changing of the Avant-Garde*, exh. Catalogue (New York: Museum of Modern Art, 2002), 23-35. Though fairly rife with factual errors, Deyong's essay charts the critical rise and fall of the idea of megastructure, from its Metabolist beginnings to its Tafurian condemnation. Deyong also notes the relevance of Baudrillard's work to the idea of megastructure, however, she employs his ideas as an *instrument* of criticism, whereas I hope to have historicized his thought as much as that of Ragon, et al.

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production of the sixties was distinct from that in other countries. Later in this study, I will argue that these characteristics play an interesting (though not recuperative) role the interdisciplinary explosion in French architecture at the end of the decade.

Try as we might, we cannot, as Frédéric Migayrou attempts to do, simply invert the relationship between architecture and theory in the sixties. Nothing seems further from a useful description of the architectural culture of the time than Migayrou's statement that "with Roland Barthes's *Writing Degree Zero*, the non-cinema of Guy Debord, the signage of Daniel Buren, cultural production in France came to accept this loss of unity in the sense that Jacques Derrida would define in *Writing and Difference*."[143] Even if these diverse citations could somehow be reconciled with one another, they could not be reconciled to the utopian architecture of the same period, the social and theoretical blind spots of which relegate it to a realm outside contemporaneous developments in other disciplines. However, it is clear that the utopias of the sixties, in France in particular, had a more complex relationship to contemporaneous theoretical developments than has heretofore been recognized, and I believe that it is within the ideological and aesthetic vicissitudes of this relationship that the significance of the Spatial City lies.

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[143] Migayrou, *Bloc*, 24.

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Chapter 2:
The French Utopia

Reception

In the inaugural issue of the seminal review founded by Henri Lefebvre and the architect Anatole Kopp, *Espace et sociétés*, Pierre Riboulet asked "who doesn't have a drawer overflowing with designs for an ideal city?"[1] Certainly, by 1970 the massive, futuristic schemes of Spatial Urbanism seemed to have no more credibility, and furthermore they seemed to arise directly from the dominant ideological structures that the French Marxist, post-Marxist, or "New Left" consideration of urbanism was attempting to dismantle.[2] Of course, one finds a considerably more mixed reception when one consults professional architectural reviews, and the popular press of the time. Although Spatial Urbanism would find no more vocal or enthusiastic supporter than Ragon (and the designers themselves), many praised the projects during the mid-sixties. The immediate visual impact of the works, their science fiction styling, and the extreme social transformations that they entailed clearly held a certain fascination.

A testament to the persuasive power of Ragon's arguments is the proliferation of Spatial Urbanism in the non-architectural press. In 1965, for instance, the journal *Problèmes*, the review of the Medical Students Association of Paris, devoted an entire

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[1] Pierre Riboulet, "Éléments pour une critique de l'architecture," *Éspace et société*, no. 1 (November, 1970): 33.

[2] It should be noted here, however, that Lefebvre himself was more open to the science fiction mentality of these utopian schemes than most of his contemporaries. He was a good friend of Constant, and felt that the latter's projects posited a viable utopian vision of a ludic society. See Mary Mcleod, "Henri Lefebvre's Critique of Everyday Life: An Introduction," in Steven Harris and Deborah Berke, eds., *Architecture of the Everyday* (Princeton: Princeton Architectural Press), 9-29.

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issue to the work of Friedman, Schöffer and Maymont, and later in the year another issue was devoted to the underground urban schemes of Eduard Utudjian and the *Groupe d'Études et de Coordination de l'Urbanisme Souterrain* (GECUS).[3] This journalistic dissemination of Spatial Urbanism is significant, and signals not only the popular appeal that these futuristic projects could possess, but on a more general level a growing awareness of urban problems and urbanism. The Editor's statement sheds light on these concerns:

> Urbanism and the future development of the city seem today to be key problems of the epoch, on whose resolution the civilization of tomorrow depends. This is why we now present an exclusive group of monographic studies, the research and projects of different avant-garde architects—true visionaries of the world of tomorrow. It seems to us that their research merits more than simple curiosity, that they present an occasion for salutary reflection, because the subject they treat does not only concern specialists, it concerns us all. It is our future, that of our children, that of our civilization.[4]

Ragon was very successful at disseminating the projects he had chosen to champion in the non-architectural press. He wrote, or was instrumental in having articles published for the journal *Planète*, for *Paris Match*, and *L'express*.[5] These, of course, were not just any magazines. Within the cultural history of France, they held a specific and important place in turning popular opinion and consciousness towards the processes

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[3] "Les visionnaires en architecture," *Problèmes*, no. 96 (January-February, 1965): entire issue; "Urbanisme souterrain," *Problèmes*, no. 99 (September-October, 1965): entire issue.

[4] "Les visionnaires en architecture," 8-9.

[5] Ragon was an arts editor for *Planète* at this time. See, for instance, Michel Ragon, "Les utopists sont-ils les vrais realistes?," *Planète*, no. 37 (November/December, 1967), 184-186; Michel Ragon, "Nouvelle idée force: La prospective architecturale," *Planète*, no. 24 (August/September, 1965), 179-181. In 1963, a major feature appeared in the popular magazine *Paris-Match* that discussed the work of Maymont, Friedman, Parent, and several others: Marc Heimer, "Univers-match,": pp. i-xvi. "Univers-match" was a special supplemental section of the magazine that appeared regularly and was devoted to special topics. Ragon was a contributor to *L'express* from 1963 to around 1966 [check]; I cite here an article (not written by Ragon) that covers the UIA conference held in Neuilly of 1965, as well as the formation of the GIAP: Michel Friedman, "Les visionnaires du bon sens," *L'express*, no. 734 (July 12, 1965), 38-39.

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of modernization.[6] *Paris Match* and *L'express* were both extremely popular weeklies that took their formats and formulas from American-style magazines like *Time*. In fact, Ragon's contributions to *L'express* came at the precise moment it was Americanizing its image, and when its circulation was at astounding heights.[7] *Planète* can only be described as a kind of Gaullist *National Geographic*, featuring articles on everything from cybernetics to the "disappearing cultures" of the rainforests, etc.. *Planète* also published a number of "Time-Life" style books in its *Encyclopédie* series, one of which was Ragon's *Les cités de l'avenir*, that included a preface by the economist Jean Fourastié, and another was the French edition of Arthur C. Clarke's *Profile of the Future*.[8]

Publishing Spatial Urbanism in these journals specifically was more than just a generalized propaganda. It was a highly targeted, and culturally significant propaganda. All of these magazines were in one way or another instrumental in the popular rejection of the ideas of the Communist party in France, and the increasing embrace of American style modernity and management. They promoted a new middle class, and encouraged full participation in the budding consumer culture of the postwar era. Ragon, et al., although highly ambivalent about American consumerism, nonetheless seemed to be in alignment with the pro-technology, anti-Marxist position of the editorship of these publications. Within their pages, the projects of the Spatial Urbanists were certainly

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[6] On the development and significance of *L'express*, see Ross, *Fast Cars, Clean Bodies*, 64-70.

[7] Jean-Jacques Servan-Schreiber, the owner of *L'express* would purchase *L'architecture d'aujourd'hui* from Bloc's widow in 1974.

[8] Arthur C. Clarke, *Profil du futur* (Paris: Encyclopédie Planète and Retz, 1964)

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denuded of any radical social content they might have had, given their placement in a different context.

As it was, these works became known more or less as what Françoise Choay described in 1965 as "technotopias."[9] As she described these projects had a significant impact on non-specialists, via their popular dissemination, and as such emulated the function of pulp novels and science fiction:

> Today, the non-specialized reader has come to completely assimilate the term urbanism and its futurist images.[...] In fact, the models and projects published in the papers satisfy, above all, the readers' need for dream, for mystery, sometimes for poetry; it offers him a means of evasion that is outside the everydayness of habit that is a source of permanent frustration.[10]

However, Choay is more measured than many of her colleagues in her judgment of these utopian projects. She denounces their over-reliance upon visual formulations and technological progress, yet maintains that "in so far as [technotopia] attempts to find solutions to precise problems, it undeniably constitutes a field of research that is full of interest, as well as a means for combating *passéiste* mental habits that, in the domain of building, present a very particular kind of resistance."[11]

The theme of paper architecture as a kind of "imagination aid" is a common one during the period. It is thus not surprising to find a similar formulation in "Architectures Fantastiques," the introductory essay by then-editor-in-chief of *L'architecture d'aujourd'hui*, Alexandre Persitz:

> It is this desire to open new paths in all directions, even the most distant from our

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[9] Françoise Choay, *L'urbanisme: utopies et réalités, une anthologie* (Paris: Éditions du Seuil, 1965), 54-58.

[10] Choay, *L'Urbanisme*, 56.

[11] Choay, *L'Urbanisme*, 56.

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> actual world, that matters. This is why we want to devote an entire number of our review to fantastic architecture.
> Such works are not typical, but merit recognition. We cannot reject, nor discourage systematically, by a foolish incomprehension, the appearance of the fantastic when we claim to want to transcend the general mediocrity of our world, the narrowness of vision and the under-estimation of our creative potential.[12]

But Persitz's optimism was tempered at the same moment by Jürgen Joedicke's Forward which qualified the usefulness of "fantastic" approaches, which he felt should be less an independent movement than an integral part of all architectural practice, in order not to risk becoming a "mannerist" aberration:

> The complexity of the processes which intervene in construction, the constant increase in knowledge via psychology, physiology, sociology, and their repercussions for architecture no longer permit us to base our work on a naïve vision of the future, born of ignorance. It is not fantastic research that will help us foresee future evolution, it is the creative imagination of the architect who has the ability to assimilate and to transpose the totality of received knowledge in an entirely new manner, surpassing the everyday.[13]

When *L'architecture d'aujourd'hui* reprised many of these projects under the official heading of "research architecture," the rhetoric had shifted somewhat away from the science fiction mentality, and more towards the isolation of specific functions and/or problems (usually of the foreseeable future) and the ways in which an architecture or urbanism unconstrained by technological limitations or governmental regulations might devise adequate agglomerations.[14]

If Choay, Persitz, et al. could perceive the possible relevance of Spatial Urbanism, others within the architectural community were less generous in their assessments of

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[12] Persitz, "Architectures fantastiques," 2-3.

[13] Jürgen Joedicke, "Imagniation et fantastique en architecture," *L'architecture d'aujourd'hui* 33, no.102 (June-July, 1962): 3.

[14] See Marc Gaillard, "Où en est la recherche architecturale en France?," *L'architecture d'aujourd'hui*, 34, no.115 (June-July, 1964): 2-3.

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architecture as research. In his important survey of contemporary French architecture published in 1967, for instance, Maurice Besset felt the need to mention these projects, if only to utterly reject their validity. His commentary is characteristic, and worth quoting at length:

> For some indeed, if research architecture is to adopt the *prospective* attitude which can alone allow it to 'adhere to the reality of tomorrow' (Maymont), it is essential for it to conform to the reality of today: a fundamental importance is attributed to this discrepancy, which characterizes utopianism. On the other hand, for want of being able to draw up more than a summary of future needs, the protagonists of utopia think it possible to establish future programs on the basis of a few factors held to be irrefutable, like the predictably huge increase in world population. They therefore concentrate their researches on defining technical researches, which they usually visualize by extending to infinity the prospects offered by contemporary science. Because, on the other hand, the most diverse formal hypotheses of the *avant-garde plastique* will likely conflict with their technological speculation, one is subjected to a rash of futurist images in which human institutions of the future are presented by the cube, cone, pyramid, grid, spiral, or even the water-lily, depending upon such and such a geometrical or natural form being invested with a particular organic virtue.[15]

For Besset, the projects diluted the concept of true architectural research by oversimplifying its methods, and by not having the burden of dealing with real construction situations.

The conclusion to be drawn from these conflicting sentiments is that the projects associated with Spatial Urbanism achieved a kind of paradoxical centrality in French architectural discourse during the 1960s. They became the touchstones of any formulation of modern or contemporary design, be it by supporting their cause, or denouncing them as misguided visions of an unfortunate recent past.

This rule held true through the beginning of the next decade. For many commentators, the purist geometries and simplified social ambitions of these projects

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[15] Maurice Besset, *New French Architecture*, 12-15. I have made certain minor changes to the translation of the English edition where I felt it necessary for readability.

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were emblems of an unfortunate legacy that had to be dealt with before progress could recommence. Post-68, even the most sober assessments of the French architectural scene still seem to follow an unofficial directive to address these works, which seemed like ambivalent totems embodying all the possibilities and risks of a past era. Addressing the "utopian discourse" of the sixties (from the vantage of 1973), Raymond Moulin, et al., referring to "utopianists" and pamphleteers as the "sorcerers" of architectural production in France conclude that by neglecting the material realities of society and construction conditions, etc., "the architect is therefore limited to a project without an object, which is to say that the real object of the architect is only a discourse on an object that doesn't exist."[16] Thus the conception of visionary architecture, and Spatial Urbanism specifically, as a spur to the imagination was superseded by a critique of its failure to engage architectural and social reality. The latter attitude set the tone for future commentaries.

Jacques Lucan's recent characterization of Spatial Urbanism as comprising "ephemeral" productions, quickly forgotten and "regarded as curiosities" is typical of the later historical fate of these works.[17] Though hardly surprising, this development is nonetheless ironic considering the marked presence of these works in the popular press and specialized architectural discourse of the sixties in France. This attitude toward the unbuilt is illustrated by recent architectural histories, which tend to measure

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[16] Raymonde Moulin, Françoise Dubost, Alain Gras, Jacques Lautman, Jean-Pierre Martihon, and Dominique Schnapper, *Les architectes: metamorphose d'une profession libérale* (Paris: Calmann-Lévy, 1973), 268. This text is essentially a broad treatment of transformations effecting the profession in the early 1970s, and a small section is devoted to utopian discourse, in which Ragon's texts are cited; see pp. 262-272.

[17] Lucan, *Architecture en France*, 127.

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"architectural" significance more so than cultural or discursive impact, and therefore tend to suppress the symptomatic in favor of the exemplary. It is also an indication of changing priorities. For instance, Tafuri and Dal Co's general survey of international modern architecture devotes more space to French and international utopianism during these years than the specifically French surveys of Abram and Lucan.[18] The reasons for this discrepancy are historical, of course; for Tafuri and Dal Co, the ideological debates of the late sixties were still pertinent, and the utopian projects of these years seemed to constitute one of the major, if unfortunate, manifestations of them.

Fantastic, Visionary, Research

The critical reception of Spatial Urbanism depended largely on its discursive positioning. In other words, as a movement that consisted of non-realized projects and ideas—publications, symposia, and exhibitions played a significant role in its own self-definition and reception by a larger audience. One of the most telling indices of this is the shifting terminology used to position the projects within various contexts, such as journals, books, and exhibitions. The transitions from the rhetoric of fantasy and imagination, to that of forward-thinking "vision," to scientific research reflect the various stages of the attempt to justify these paper projects as viable modes of architectural production. The significance of these shifts are self-apparent—they indicate the search for credibility—but the specific machinations are nonetheless important for an understanding of the role of Spatial Urbanism in the French context.

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[18] See Abram *L'architecture moderne*, 282-284, and Lucan, *Architecture en France*: 127-128. Tafuri and Dal Co devote and entire chapter, "The International Concept of Utopia," *Modern Architecture*, 357-364.

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The "fantastic" aspect of Spatial Urbanism has already been discussed above—the "spur to the imagination" conception of utopian proposals was a convenient way to introduce these fanciful projects into a serious modernist discourse. Such is the approach taken by *L'architecture d'aujourd'hui*, in its "L'architectures fantastiques" issue of 1962 [fig. 2.1]. Of course, the implication that these works were mere figments struck a nerve with some designers such as the engineer René Sarger, who contributed a short essay about the work of Paul Maymont:

> There has been, for some time, a 'fantastic' tendency of our epoch which has no links with the past, which is not bathed in reminiscences; a fantastic tendency which no longer produces 'monstrous' creations, but which is based on the possibilities of technology, on the fact that human consciousness lags behind in its understanding of the reality of tomorrow, a fantastic tendency of anticipation.[19]

But Sarger too easily formed an opposition between the idea of technical feasibility and the fantastic. Further, he underestimated the cachet that many of these fantastic images (not limited to the modernist inclusions) would have in the formulation of an anti-functionalist discourse during the sixties.

The works included were not limited to projects by those designers associated with Spatial Urbanism. Indeed, the issue sought to form a more or less complete survey of fantastic and visionary architecture, from Boullée's *Cenotaph for Newton* (1784) to the work of M.C. Escher, to elaborate Indian Hindu rock-cut temples. More predictably, the journal begins with a survey of modernist projects, in which the work of the German Expressionists, Russian Constructivists, Italian Futurists, Frederick Kiesler's and Paul Nelson's experimental houses, the visionary works of Wright, and Gaudi, etc. merge

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[19] René Sarger, "Fantastique d'aujourd'hui, réalité de demain: quelques etudes de Paul Maymont." *L'architecture d'aujourd'hui* 33, no.102 (June-July, 1962): 74-75.

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together (effectively erasing their social and political specificity) to form a history of the modern fantastic. More immediately influential and significant projects include Marcel Lods's and Vladimir Bodiansky's 1933 *Palais des Expositions*, Buckminster Fuller's dome projects for Manhattan, and Louis Kahn's project for the Philadelphia Civic Center (1957), and the space frame tower (1952-7) in collaboration with Ann Tyng [Figs. 1.24, 1.25].

Essays in the issue are devoted to artists as well as architects, from the sculptor Bernard Reder, to the American follower of Wright, Bruce Goff, and another American, Herb Greene, whose Norman, Oklahoma house (1961) figured in Banham's formulation of "*un architecture autre.*"[20] Also included is an essay on Bloc's *Sculpture Habiticle* (1962) located on his own property in Meudon. In addition, a special fold-out section is devoted to Soleri's ideal cities (*Mesa City*, c. 1960). The Spatial Urbanists included are Yona Friedman, Constant Nieuwenhuys, Paul Maymont, and Frei Otto, and Eckhard Schultze-Fielitz (one of whose models is featured on the cover).

The inclusion of Spatial Urbanism amidst all of this *architecture autre* and architecture "without architects" appears incongruous. Sarger's objections reflect the real difference between, say, Maymont's work and that of Bruce Goff, for example. The latter was mounting a Wrightian, organically-based critique of functionalism, and the former was simply not interested in such a critique. Sarger's comments are not so much about technical feasibility as they are about the conception of functionalism, and the valid place that Maymont's Spatial projects had within that conception.

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[20] Reyner Banham, *The New Brutalism* (New York, Rheinhold, 1966), 68-9. Banham coined the phrase in 1955, following the painter Michel Tapié's formulation of "*un art autre.*"

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The use of the term "fantastic," however, is not without precedent, and indeed it seems likely that *L'architecture d'aujourd'hui*'s editors adopted it based upon Ulrich Conrads' and Hans Günther Sperlich's *Phantastische architektur*, of 1960, the French and English editions of which appeared the same year.[21] Conrads's and Sperlich's text was part historical survey and in part an index of growing interest in the realm of utopian or fantastic design in the postwar period. Doubtless, new technologies and materials were making the fanciful drawings of the Expressionists seem somewhat nearer to reality, and a new generation had taken up the utopian torch: Fuller, Otto, Wachsmann, et al.. As it turns out, the concerns of the interwar generation, and their contemporary counterparts were quite similar: Great heights and expanses, light structures, or dark caves, extreme formal rigor, and the desire for architecture to somehow communicate, were and continued to be significant factors; as was the assertion of "fantastic" design as a critique of current modern building. Both generations seemed inspired by Gropius's words: "[t]oday there really does not yet exist a true architect[...]."[22]

But the authors noted that the current generation was more sober and serious, and it lacked the euphoria of the architects of 1919. This was true, but it was not due to a lack of enthusiasm. Rather, it seems to have stemmed from their belief that their designs were not utopias destined for an imaginary future, but rather were more profoundly in concert with the foundational principles of contemporary society. Thus, they turned to the social

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[21]Ulrich Conrads and Hans Günther Sperlich, *Phantastische Architektur*, (Stuttgart: Verlag Gerd Hatje, 1960); *Architecture fantastique* (Paris: Delpire, 1960); *Architecture of the Fantastic: Utopian Building and Planning in Modern Times* (New York, Praeger, 1960); an expanded English edition appeared in 1962: George Collins and Christiane Craseman, ed, trans.. Citations are from the latter edition.

[22] Quoted by Conrads, *Architecture of Fantasy*, 23.

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sciences and mathematics, etc. for their sources. This, too, was the basis of their critique of contemporary building: it called itself modern but had failed to take into account key postwar transformations that called for new conceptions of architecture and the city.

This was especially the case in the French context. Here, where the widespread implementation of "modern" building and planning had evoked a strong public reaction, and a subsequent crisis in the discipline, a new conception of what constituted modern seemed to be in order. In many ways, the disparity of sources presented in "Architectures fantastiques" is a reflection of a certain desperation—a frantic searching for new inspiration and new means. But no new method or solution could be derived *ex nihilo*, and thus a historical precedent was in some ways required. The ideal precedent presented itself from the best possible source (a local tradition): the French Revolution, and the "visionary" or "revolutionary" architects associated with it.

Though it was hardly a strategic or concerted choice, the shift from the rhetoric of the fantastic to the visionary was a reflection of the pragmatic orientation of the French avant-garde. Although the futuristic designs by members of GIAP eschewed the idea of a symbolic language of architecture or *l'architecture parlante*, the ramifications of the idea of architectural space provoking or embodying revolutionary social transformation seem clear enough. Ragon named his 1965 collection of works by GIAP members *Les visionnaires de l'architecture* [fig. 2.2]. This, as he said, was a direct reference to Ledoux and Boullée (he excluded the "delirious and surreal" works of Lequeu).[23] For Ragon, it was necessary to distinguish between two types of "fantastic" design: a "free" fantastic, and a "prospective" fantastic. The former was expressionistic and surreal,

[23] Ragon, *Les visionnaires*, 8.

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while the latter was serious and potentially buildable.[24]

Nor was it coincidental that Ragon's compilation of "visionary" projects coincided with a very successful exhibition at the Bibliothèque Nationale entitled *Architectes visionnaires* that featured the drawings of Ledoux, Boullée, and Lequeu newly exhumed from that institution's collection (opened November 10, 1964).[25] The exhibition traveled, and we find the same kind of desire to parallel the 18th-Century works with modern ones in the United States, for instance as in France. In Houston (New York was a later stop), Louis Kahn and Buckminster Fuller gave lectures in conjunction with the exhibition.[26] For Ragon, the work of the revolutionary architects was visionary, not because it posited some unforeseen future, but rather because it contained within itself the true conditions of Enlightenment society: rationality, clarity of form and order, etc..

But the legacy of the original visionary architects, and their connection to their late-20th-Century counterparts became the point of some contention in France. In June of 1966, the "other" major avant-garde group based in Paris, *Architecture Principe*—Claude Parent, Paul Virilio, Michel Carrade, and Morice Lipsi, together with Patrice Goulet opened an exhibition at Ledoux's *Royal Salt Works* at Arc et Senans. Called "Exploration of the Future," the context of the show, and Virilio's commentary on it

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[24] Ragon, *Les visionnaires*, 8.

[25] Not to be confused with the 1967 Museum of Modern Art exhibition "Visionary Architecture," featuring works by Walter Pichler, Hans Hollein, and Raimund Abraham.

[26] Kahn spoke on "Architecture of the Incredible," and Fuller on "Envisioning the Invisible: A Twentieth Century Speculation on Twenty-First Century Architecture." See the catalogue: *Visionary Architects* (Houston: University of St. Thomas, 1968). There was no French edition of the catalogue.

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made the "visionary" connections explicit.[27] Besides the work of *Architecture Principe*, the exhibition featured works by Archigram, the Metabolists, and Paolo Soleri [fig. 2.3]. Works by GIAP members must have been conspicuous by their absence.

Though they seldom mentioned them by name it was clear at the time that the principles of the *Principe* group were established partly in opposition to the light and mobile structures of the Spatial Urbanists (see Chapter 4). This appropriation of the "visionary" terrain is one indication of this. Paul Virilio's understanding of the theoretical function of visionary architecture was simply completely different from that implied by Ragon and members of GIAP: "Architecture is the art of containment. Visionary architecture contains that which is not, or not yet. It is the presence of an absence, an object contrary to objectivity."[28] Certainly, visionary architecture as a theoretical entity self-consciously opposing objectivity (either in the sense of material reality or scientific methodology) is a conception that would have been flatly rejected by Ragon, Friedman, Maymont, et al., who asserted the Prospective reality of their designs. Virilio would go on to become one of the leading theorists of space and ideology in the seventies and eighties, relying, no doubt upon his experiences in the sixties to describe the ways in which communications technologies are re-shaping the cultural landscape.

But it was precisely on the issue of what constituted a visionary architecture that one member of Ragon's group dissented—Ionel Schein. His dual interest in aesthetics and technology made Schein a perfect candidate for Ragon's delineation of the new architecture in France. Ragon published Schein's projects in *Où vivrons-nous demain?*

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[27] Paul Virilio, "Une exposition d'architecture: exploration du future," *Aujourd'hui*, no.52 (February, 1966): 95, 97.

[28] Virilio, "Une exposition d'architecture," 95.

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and in 1965 Schein signed on as a founding member of GIAP. Though likely initially intrigued by GIAP's interdisciplinary approach and lively public forums, Schein quickly broke with the group.[29] Though Ragon does not recall why he split with GIAP,[30] it seems likely from Schein's subsequent publications that it was over ideological issues. Schein clearly felt that the "visionary" projects of his GIAP colleagues were too simplistic—that they substituted facile formal solutions in place of more engaged social and political designs. Indeed, it was precisely in an essay about Ledoux that Schein expressed his most explicit critique of Ragon's group:

> And if I have taken the opportunity here to demonstrate the actuality of Claude-Nicolas Ledoux, it is because of the great number of my colleagues who imagine themselves to be acting *à la Ledoux* under the pretext of designing curves and spheres, hexagons and twisted towers, tapered and otherwise streamlined works; works that a certain commentator calls utopian, visionary or Prospective, but which are fundamentally wrong, because they are decadent, without fantasy, and without understanding of the real evolution of the society in which they are participants. Thus, their society refuses them. Ledoux was not refused by his, because he constructed his...utopias![31]

Schein leaves little room here to doubt who this unnamed commentator is. Furthermore, he underlines the fact that his conception of visionary was based upon a true understanding of the base conditions of society—an understanding claimed, but never fully achieved in Schein's opinion, by Ragon, et al..

The next stop on the rhetorical route of French utopianism was the idea of architecture as "research," which was discussed above via Besset's commentary. But in

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[29] Ragon indicates that he left within one year of the founding of the group: Ragon *Prospective et Futurologie*: p. 342.

[30] Interview with the author, April 8, 2002.

[31] Ionel Schein, "Ledoux et notre temps," in *L'oeuvre et les rêves de Claude-Nicolas Ledoux* (Paris: Éditions du Chêne, 1971), 32.

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the mid-sixties, the shift was nonetheless a significant one. By changing the conception of these projects from all-encompassing visions of future worlds, to the intense exploration of specific problems, their social ambitions were tamed somewhat in favor of their direct applicability. One of the most vocal proponents of this view was Marc Gaillard, a young critic and GIAP member. Gaillard portrayed the members of GIAP as "lone researchers" diligently working outside the auspices of officialdom, with no interest other than the enhancement of urban life.[32]

The adoption of the term research also signaled a greater push for official recognition. In another context, Gaillard decried the fact that:

> The officials involved in urbanism and the Ministry of Construction are far from becoming involved in all of this, too occupied no doubt with debating in the labyrinth of an administration encumbered by outdated clichés, and excessive and sterile regulations. These men ignore, not only the works, but the names of those researchers who have undertaken, at their own expense, the promotion of an architecture and an urbanism in relation with the spirit of our times. Their subordinates, who make cuts and impose decisions or regulations, also ignore, or simply do not get the 'eccentric' ideas [of these researchers], 'which are only good to provide journalists with a few sensationalist articles.' They pose obstacles by an outdated but tenacious set of regulations.[33]

Though the designation "research architecture" was about to be replaced by Ragon's use of the term "Prospective" (see below), the shift to "research" indicates the increasingly pragmatic orientation of the discourse at this moment. Having grown tired of languishing in "special issues" of various architectural journals, and existing as a kind of parallel universe to the real world of built architecture, the critic Michel Ragon was about to take the helm of a last ditch effort in France to push these utopian designs into the realm of reality.

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[32] Marc Gaillard, "Plaidoyer pour les chercheurs," *Urbnanisme* 35, no.92 (1966): 12.

[33] Marc Gaillard, "Où en est la recherché architecturale en France?," *L'architecture d'aujourd'hui* 34, no.115 (June-July, 1964): 2.

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Michel Ragon and the GIAP

Though his name is hardly known outside the French context, Michel Ragon was an important cultural animator of the fifties and sixties in Paris. Perhaps best known for his art criticism, Ragon continues to be a prolific writer, and has produced literary criticism, art and architectural criticism, fictional works, poetry, and memoirs. Born in Marseilles in 1924, Ragon arrived in Paris in 1945, where he worked as a *bouquiniste* or bookseller on the quays of the Seine well into the late sixties, and quickly insinuated himself into the cultural sphere. Ragon was proud of the fact that he was an autodidact, and of his arrival into the center of the Parisian avant-garde outside the framework of the academy. His base of knowledge was broad, and covered almost everything from *belles-lettres* to contemporary, popular science. He seemed to represent a particular French type of modern, independent thinker, devoted both to technological and economic development as well as maintaining a strong sense of national identity. Like so many other Frenchmen during the Cold War, he recalls being a strong opponent of both "American imperialism and Stalinist despotism."[34]

After the war, Ragon found himself engaged in the cultural fallout of the French occupation. Around 1950, for instance, he was petitioning in favor of an eclectic mixture of important modernists, like the novelist convicted of Nazi collaborationism, Louis-Ferdinand Céline and Le Corbusier, while establishing himself in opposition to the likes of the existentialist philosopher Jean-Paul Sartre, and the Surrealist/Lettrist, Isidore

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[34] Michel Ragon, *D'une berge à l'autre* (Paris: Albin Michel, 1997), 265.

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Isou.[35] Ragon's sentiments against Existential Marxism, and for a vaguely apolitical modernity were not unique. This was a cultural position perhaps best exemplified by the success of the journal *L'éxpress*, and the "triumph" of Claude Lévi-Strauss's Structuralist model over Sartre's notions of "engaged" literary production.[36] Though Ragon was not influenced by Lévi-Strauss, or the other Structuralists,[37] he did share in the period's quest for a modern existence based upon the liberating potential of technology and scientific method.

Ragon initially supported General de Gaulle's return to power, but was more or less disillusioned with the Fifth Republic's policies by the early sixties. Describing himself as a "Libertarian," Ragon is difficult to pigeonhole politically. In the forties and fifties he was engaged with workers' issues, and he wrote about proletarian literature. Ragon soon gravitated towards an anarchist politics, and was deeply influenced by Daniel Guérin, whom he knew through his close friend, the artist Jean-Michel Atlan.[38] But, by the sixties, Ragon was questioning both anarchism and Marxism and searching for another way.[39] No clearly-defined political position arose from this search, but it is interesting to note that this was the period in which he was engaged most directly with architecture, and it seems likely that his support for the public ownership of land, and the

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[35] Ragon, *D'une berge*, 264.

[36] See Mark Poster, *Existential Marxism in Postwar France* (Princeton, Princeton UP, 1975); François Dosse, *History of Structuralism*, 2 vols, trans. Deborah Glassman (Minneapolis: University of Minnesota Press, 1997).

[37] Interview with Ragon, April 8, 2002.

[38] See, for instance, Daniel Guérin, *L'anarchisme: de la doctrine à l'action* (Paris: Gallimard, 1965), trans. Mary Klopper as *Anarchism: From Theory to Practice* (New York: Monthly Review Press, 1970).

[39] Ragon, *D'une berge*, 261-262.

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recognition of the need for State intervention in the implementation of large-scale urban planning had an effect on his political views.

But Ragon's politics were secondary to his engagement with artistic culture, which dominated his thought throughout the *trente glorieuse*. Ragon is best known as one of the main critical supporters of the so-called "lyrical abstractionist" school of painting. Lyrical abstraction was a harmonious form of expressionism exemplified by artists such as Hans Hartung, Pierre Soulage [fig. 2.4], Martin Barré, and Serge Poliakoff [fig. 2.5]. But, as in architecture, Ragon's artistic tastes were very eclectic, and he found himself writing about Jean Dubuffet, the *art informel* of Fautrier [fig. 2.6] and Wols, the COBRA artists Karel Appel and Asger Jorn, Yves Klein [fig. 2.7], and other artists associated with *Nouveau Réalisme* and friend Pierre Restany.[40] The volume of Ragon's writing on art from the fifties and sixties is astonishing. As Restany pointed out in 1970, by the age of 46, Ragon had written about 46 books on art.[41] He had established relationships with publishers such as Albin Michel, Robert Laffont, and Castermann, and was regularly contributing to (and in some cases, performed editorial duties for) numerous journals, such as *Arts*, *Planète*, and *L'express*. In 1953, Ragon co-founded the important art review *Cimaise* with the gallerist Jean-Robert Arnaud. (Arnaud's gallery would later become the venue for the first GIAP exhibitions.) The changing emphases of this journal from simply abstract painting and sculpture in the fifties, to more social and technical concerns in the sixties, reflected the society at large and Ragon's shifting

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[40] The best survey of Ragon's life and engagement with artistic culture in France is the exhibition catalogue, *Autour de Michel Ragon* (Nantes: Musée des Beaux-Arts, 1984).

[41] Restany, "Ragon: un nouveau critique pour une nouvelle architecture," *Domus*, no. 487 (June, 1970): 5.

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interests as well.

In addition to the lyrical, Ragon was also extremely interested in the "cold" or geometric brand of abstraction, as represented by his friends and GIAP members Victor Vasarely and Nicolas Schöffer. Ragon met both Schöffer and Vasarely in 1956 at a "Festival of Avant-garde Art" he organized at Le Corbusier's *Unité d'Habitation* in Marseilles [Figs. 2.8, 2.9].

Ragon's introduction to the world of architecture and urbanism came in 1956 during a trip to Japan, where he met the young architects who would comprise the Metabolists: Tange, Isozaki, Kikutake, and Maekawa. Clearly, these meetings piqued Ragon's interest, and upon his return to France, he immediately made contact with Le Corbusier.[42] In 1958 he published his first book on architecture, the ambitious survey, *Le livre de l'architecture moderne* [fig. 2.10].[43] Interestingly, this text was the first general survey of the modern movement originating in the French language. Part historical round-up and part apologia for modern architecture and urbanism, this text is both comprehensive and polemical. For Ragon, the book was meant "to help the reader to live with his time, to understand his 'modernity,' and to allow himself to go forward towards the unknown, or towards the vagueness of the future."[44] Here we find two themes central to Ragon's architectural writing: the delay with which modern advances are implemented in architectural and urban design, and the attempt to convince a reluctant public of the merits of modernism, or futurism. At this stage, prior to his introduction to Spatial

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[42] Armel, *Les itinéraires de Michel Ragon*, 115.

[43] Michel Ragon, *Le livre de l'architecture moderne* (Paris: R. Laffont, 1958).

[44] Ragon, *Le livre de l'architecture*, 15.

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Urbanism, Ragon's ideal model became the architecture and planning of Le Corbusier. The idea of the *Ville Radieuse*, and the reality of the *Unité* in Marseille convinced Ragon of the need for a fairly complete overhaul of the urban environment.[45] Moreover, though, it is also clear from the text that to have taken up the "cause" of modern architecture in the late fifties was to engage in a losing battle. *Sarcelles* was being constructed, and other buildings, such as the UNESCO headquarters near the *École Militaire* were already engendering much controversy in the press.[46]

Ragon continued thinking about architecture and urbanism in the early sixties, and published a series of articles in the popular weekly journal *Arts* (previously *Arts-Spectacles*) that was a survey of real and imaginary plans for the urbanism of the Parisian Region.[47] It was during the preparation for this series of articles, in December, 1961, that Paul Maymont met with Ragon in his *Arts* office, and introduced him to the work of the Spatial Urbanists.[48] After publishing the work of Friedman and Maymont as the climax of his survey of Parisian urbanism,[49] Ragon established contact with other architectural "visionaries." It was his introduction to this material that convinced him that it was

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[45] Ragon, *Le livre de l'architecture*, 153-166.

[46] Thus, Ragon responded in a section entitled "Pourquoi combat-on l'architecture moderne?" Ragon, *Le livre de l'architecture moderne*, 167-190.

[47] There were three main articles: Michel Ragon, "Paris ville musée ou cité du xx^{e} siècle," *Arts*, no. 856 (February 14-20, 1962): 14-15; "3 plans 'satellites'," *Arts*, no. 857 (February 21-27, 1962): 5; "Un plan revolutionnaire: l'urbanisme spatial," *Arts*, no. 858 (February 28-March 5, 1962): 5. Several weeks later, some follow-up articles appeared: Gérald Gassiot-Talabot, "20 architects s'affrontent," *Arts*, no. 869 (May 16-22, 1962): 2; Michel Ragon, "Robert Le Ricolais précurseur de l'urbanisme spatial," *Arts*, no. 871 (May 30-June 5, 1962): 2; Michel Ragon, "Cinq grands de l'architecture font le point," *Arts*, no. 872 (June 6-12, 1962): 9.

[48] Ragon, *Prospective*, 14.

[49] Ragon, "Un plan revolutionnaire."

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possible to supersede the monolithic figure of Le Corbusier.[50]

Almost immediately, Ragon began work on what would become, for better or worse, the most influential text on French visionary architecture and Spatial Urbanism. *Où-vivrons nous demain?* (1963) [fig. 2.11] was a thematic survey of futurist projects from a large variety of designers. These included canonical (by 1963) works by figures of international renown: Buckminster Fuller, Louis Kahn, and Le Corbusier, etc., as well as less well-known architects from other European and American countries. But, for the most part, Ragon dwelt upon those designers who, like himself, had been born in the 1920s, and were now working in or around Paris, producing "spatial" projects, or working in the integration of the arts, etc.

Virtually every post-war trend is covered in the text, from industrialized prefabrication to expressionistic "architecture-sculpture,"[51] although Ragon draws 90% of his examples from French designers. The chapter titles give an indication of these concerns: "The New Forms of the City of Tomorrow," "Spatial Urbanism," "Underground Urbanism," "Mobility," "Soundproofing, Climatization, Immateriality," "Civilization of Leisure and Spectacles of the Future," etc.. The text tends to combine sociological statistics with speculation about future technologies and in-depth discussions of modernist aesthetics, from transparency to the demise of *l'angle droit*. This amalgam of disparate influences might account for the success of the book, which became widely known through many translations (though there is no English translation).

But the text also had a polemical aspect. Ragon positioned the work of these

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[50] The idea of a Post-Corbusian urbanism is treated in Ragon, "Après Le Corbusier," in *Les Visionnaires de l'architecture*, 5-10.

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visionary architects against the Government's adoption of what he perceived as a totally outmoded modernism, derived from the publications of CIAM:

> The Athens Charter has become the credo of modern architects. Unfortunately, this admirable thesis, which has only been partially applied, dates from 1943. If urbanism is a science that must conform itself to the evolution of life in society, [the Athens Charter] is fine for those urbanists who somehow have not noticed that the world has changed somewhat in the last generation.[52]

Ragon's point is clear: radical social and technological change calls for radical architectural and urban solutions.[53] What were these changes? Predictably, they included massive population increase, a demographic shift of those populations to the city, transformation in production from industrial to administrative, and the subsequent increase in leisure time provided by new industrial technology. Also, Ragon discusses alternate energy sources, colonization of heretofore-uninhabitable spaces (from the ocean to other planets), and other vague speculations typical of the Prospective approach (see below).

The solutions were almost too diverse. Ragon's discussion covered every scale, from individual dwellings to vast cities. More seriously, perhaps, he included tendencies that were in aesthetic or ideological opposition, without acknowledging the potential conflicts. The result was a somewhat confused reflection of Ragon's enthusiasm for all things modern. It simultaneously threatened to overwhelm the core argument of the text, which maintained that recent metamorphoses in society required a new urban environment, which found its best expression in the works associated with Spatial

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[51] Ragon claims to have coined this term in *Prospective et Futurologie*, 13.

[52] Ragon, *Où vivrons-nous demain?*, 11.

[53] The best general account of the development of CIAM is Eric Mumford, *The CIAM Discourse on Urbanism, 1928-1960* (Cambridge: MIT Press, 2000).

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Urbanism.

Voluminous architectural writings by Ragon followed *Où vivrons-nous demain?*. The most intense year was certainly 1965, which saw the books *Les visionnaires de l'architecture*, *Paris: hier, aujourd'hui, demain* [fig. 2.12], and a large number of articles supporting Spatial Urbanism, and announcing the formation of the GIAP. By and large, these writings were propagandistic. They repeated the same basic argument, and presented the same solutions: population increase and technological advancements require a new type of urban space, which should be mobile, in the Third Dimension, etc. The following years saw even more publications by Ragon on the same topics: *Les cités de l'avenir* (1966), *La cité de l'an 2000* (1968) [fig. 2.13], and finally a more critical take on modern urbanism, *Les erreurs monumentales* (1971).[54]

Though he continued his art criticism during the sixties and seventies, "Prospective Architecture" dominated Ragon's activity from the early sixties to around 1978, when he completed his massive, three volume work: *Histoire mondiale de l'architecture et de l'urbanisme modernes*. His concentration on these issues during the period in question is not surprising. It was a time of intense public debate that had resulted from the controversies of postwar urban policies and the administrative re-organization of Paris and its region in the first five years of the sixties. The quantitative questions of the forties and fifties (housing for the greatest number, mass-production techniques, etc.) were giving way to the qualitative questions of the sixties (social issues,

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[54] *Les cités de l'avenir* (Paris: Editions Planete, 1966); *La Cité de L'An 2000* (Paris: Casterman, 1968); *Les erreurs monumentales* (Paris: Hachette, 1971). He also published more articles on Spatial Urbanism in various architectural, art, and popular periodicals. See also Michel Ragon, *The Aesthetics of Contemporary Architecture*. Trans. Haaken Chevalier (Neuchatel: Ed. Du Griffon, 1968).

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freedom and mobility, etc.). For Ragon, Spatial Urbanism offered a real solution to the problems of the present, and the future.

This context set the tone for Ragon's architectural criticism. For him, a "truly" modern architecture was something that had to be fought for on several fronts. One had to change public opinion, because it had unfortunately been shaped by projects that were "vulgarizations" of the work of the great modern masters (namely Le Corbusier); one had to convince the administration of the technical and economic feasibility of visionary proposals, and steer them away from the types of compromise that always attended the development of large-scale projects; and finally one had to convince the architectural establishment that their practice was *en retard* and needed to be updated to account for contemporary conditions. But despite his polemical tone and operative goals, Ragon never relinquished the poetic aspect of his criticism. For him, the Spatial city was the physical context of a new humanity—mobile, free, and attuned to a totally new aesthetic landscape. Thus, he was drawn to the paradoxical nature of the designers he gathered around him. He appreciated the structural rigor and objectivity of Le Ricolais, and was simultaneously drawn towards the "lyrical" and expressionistic abstraction of Matthias Goeritz, for example.[55]

The simplicity and consistency of Ragon's formulations were reflections of his dedication to the work of his colleagues, but they were also part of his attempt to have a real impact on both public opinion as well as official urban policies in and around Paris. He was successful to a certain extent. Through his many contacts in publishing, cultural magazines, etc., Ragon had established avenues of communication to professional

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[55] Ragon makes this point himself in Ragon, *Prospective*, 344.

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architects, artists and patrons, government officials and the general public.[56] Publications in magazines like *Paris Match* and *L'express* guaranteed a certain amount of public recognition. Also, around 1964, Ragon was meeting with Paul Delouvrier, who consulted with him about the extremely controversial *Schéma directeur de l'aménagement de l'urbanisme de la région de Paris* before it was finalized (see Chapter 3 for a more detailed discussion).[57]

Certainly, the formation of the *Groupe international de l'Architecture Prospective* (GIAP) in 1965 was an integral part of this public relations campaign on behalf of his designer friends.[58] On the 21st of June, Ragon held a press conference to announce the formation of the group at the Musée du Cinéma that was well-attended by the press, government administrators (including Eugène Claudius-Petit), as well as professional architects.[59] Notable architects who supported Ragon and the GIAP included Marcel Lods, Éduard Albert, Jean Balladur, and André Wogensky, among others.[60] (Le

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[56] Ragon indicated to me that the exposure of GIAP in the popular press was always very important to him, though he regretted the "vulgarization" of the ideas that this exposure entailed. Interview, April 8, 2002.

[57] Interestingly, when Delouvrier first contacted Ragon in May of 1962, it was Delouvrier who insisted on a "vue 'prospective' d'ensemble de la région parisienne, qui fasse appel à l'esprit de synthèse et à l'imagination," apparently *before* the term "Prospective" was an integral part of Ragon's critical vocabulary; letter from Delouvrier to Ragon, May 31, 1962, MRAGO.xr003/1.

[58] Very little has been written about the formation and activities of this group. To construct this chronology, I have relied upon several sources: Ragon, *Prospective*, 341-344; Restany, "Ragon"; Georges Patrix, "Depuis 1958," in *Autour de Michel Ragon*, 109-116; Aliette Armel, *Les itinéraires de Michel Ragon* (Paris: Albin Michel, 1999), as well as Ragon's archives, and my interviews with him, Yona Friedman and Paul Maymont.

[59] Some of Ragon's correspondence to Government administrators survives in his archives: letter from Ragon to Jacques Chaban-Delmas [President of the National Assembly], November 25, 1966, MRAGO.MX001/103, and Letters to and from Paul Delouvrier, MRAGO.XR003/1, and MRAGO.XR003/13.

[60] Undated GIAP memo, MRAGO.mx007/35.

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Corbusier was asked to join as a "patron," but declined on "principle," though he was encouraging about Ragon's efforts.[61]) As Restany recounted, Ragon described the genesis of the group at this event: "Having seen the diverse horizons of research, a certain number of individuals realized that their differences were fewer and weaker than their points of convergence, and that by forming an organized group they could constitute a moral force that would be able to influence passive or uninformed opinions."[62]

1965 was a very well-organized year for the GIAP. Announcements appeared in architectural journals, *Planète*, *Cimaise*, and the popular press. Published in the same year, *Les visionnaires de l'architecture*, which was a collection of texts by Ragon, Schöffer, Friedman, Maymont, Jonas, and a concluding essay by the architect Jean Balladur, acted as a kind of catalogue or handbook to the principles of the GIAP. A large exhibition of the work of GIAP members was sponsored by the glass manufacturer Saint-Gobain, and held at their factory in Neuilly-sur-Seine, and coincided with the 8th meeting of the *Union Internationale des Architectes* (UIA), which was also held in Neuilly.[63] Also at this congress, a film about the work of GIAP members called *Où vivrons-nous demain?* was screened. This relatively short film, directed by Jean Herrmann comprised fast-paced montages of contemporary Paris, brief interviews with disgruntled commuters, Ragon and the architect Alain Bourbonnais hanging around a construction site, drawings

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[61] Letter from Ragon to Le Corbusier, June 8, 1965, with notation added later by Ragon MRAGO.mx.001/22.

[62] Retany, "Ragon," 4.

[63] A catalogue was produced, but now seems impossible to find: *12 villes prospectives* (Paris: Saint-Gobain, 1965). The UIA was an international organization founded in 1948, and headquartered in Paris that held annual thematic meetings. An excellent, albeit anecdotal account of its formation and activities can be found in Pierre Vago, *Une vie intense* (Paris: AAM Éditions, 2000), 437-472.

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and maquettes by Pascal Hausermann, Claude Parent, Nicolas Schöffer, and others, and Paul Maymont issuing terse statements like "Lightness, mobility: these are the imperatives that life imposes on the architecture of tomorrow."[64] In November of '65, the GIAP also made its presence felt at the 16th *Jour Mondial de l'Urbanisme* that was organized by the Journal *Urbanisme*, at which Ragon gave a presentation.[65] Soon thereafter, in 1966, a special issue of *Urbanisme* appeared, edited by the GIAP member, Marc Gaillard on "L'aventure de la cité future."[66]

A GIAP conference series at the Musée des Arts Décoratifs began in December of 1965. This conference series was perhaps the most important *manifestation* of the GIAP. Here, not only did the perennial members give their usual spiels, but outside experts also participated, and truly enlarged the disciplinary context of Spatial Urbanism. The first round of symposia began on December 2 with a fairly general roundtable "How are Cities Born? (Evolutive Urbanism)" with GIAPs founding members, Biro and Fernier, and Jacques Bardet. Other events followed, about every other week—"New Architectural Technology," "Mobile Architecture," "Underground Urbanism" (With Utudjian and the GECUS), etc.. On the 20th of January, 1966, the scientist Jacques Menetrier participated on a panel with Nicolas Schöffer on the topic of "Urbanism and Cybernetics." Later, Menetrier, who was interested in grandiose historical theories about the dialectical

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[64] This description of the film is taken from the directorial notes, "Où vivrons-nous demain?" MRAGO.MX005/30

[65] Michel Ragon, "Formes possibles de la cité future," unpublished abstract, MRAGO.mx008/1

[66] Gaillard, Marc, ed. "Recherches comtemporaines." *Urbanisme* 33, no. 92 (1966): 12-81.

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relationship between the organic and the inorganic,[67] devoted an essay to a major work on the sculptor.[68]

Two other panels in this first series seem particularly noteworthy. The artist-participants of GIAP held a discussion on the 27th of January on "Colored Urbanism and Architecture Sculpture." Participants were: James Guitet, Carl Nesjar, George Patrix, Robert Risler, Schöffer, Pierre Szekely, and Victor Vasarely. Szekely was a sculptor who had been involved with several architectural projects for biomorphic houses, and Vasarely was at this time formulating his ideas on a "polychromatic city." Vasarely's paintings of these years correlated to his urban ideas insofar as many of them were conceived as models for cladding materials—colored in adherence to the artist's theories of formal equations [Figs. 2.14, 2.15]. This conference is interesting because it brought together the two aspects of abstraction found within GIAP at this time: the hard-edge geometric, and more expressionistic variations. Later, in March, the economist Jean Fourastié and an individual listed as "Professor Marois," spoke on "The Institution of Life and Urbanism." Ragon had for some time been influenced by the ideas of Fourastié, who theorized about the impact of technology on work and leisure.

The second series of conferences (October-March, 1966-1967) branched further from the disciplines of art, architecture and urbanism, and included several evenings devoted to musical theory and demonstrations of new musical instruments. The painter Walter Jonas presented his *Intrapolis* project on the 15th of December, and Friedman discussed "Methods of Urbanism" earlier in November. Early in 1967, a series of

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[67] See, for instance, Jacques Menetrier, *Éloge de l'incertitude* (Paris: La Colombe, 1956).

[68] See: Guy Habasque, *Nicolas Schöffer: Space, Light, Time* (Neuchatel: Griffon, 1963).

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lectures took place given by Louis Armand, the sociologist of the Prospective who was very influential on Ragon (see below), a speaker listed simply as Burckhardt (I am guessing this is Lucius Burckhardt the German critic), Frei Otto, the Sociologist Abraham Moles, who gave a lecture on the "Human Perception of Space,"[69] and finally another presentation by Vasarely.[70]

These lecture series encapsulated Ragon's interests, and the points of convergence of the speakers sketched out what the Prospective city might look like. It was to be an aerial mélange of giant space structures, biomorphic dwelling capsules, electronically-controlled spectacles, and constant movement. Walkways, tracks, and roadways would criss-cross over and under one another through ambient spaces. Private dwellings would give way to vast public spaces, and nature and industry would be integrated into the same massive infrastructure. The play of light, color and sound would replicate the evolutionary potential of the structure itself—open to changing populations, technologies, and other factors such as climatic conditions. But, this vision is an extrapolation—only rarely was any truly synthetic notion of the new city that would incorporate all of these elements described.

As Restany pointed out, the first two years of the GIAP's activities were the most

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[69] Abraham Moles, "Les coquilles de l'homme: réflexion d'un psychosociologue sur la perception humaine de l'espace," unpublished manuscript of a lecture given at the Musée des Arts Décoratifs, February 23, 1967, MRAGO.mx005/7. A version of this lecture would later appear in Abraham Moles and Elizabeth Rohmer, *Psychologie de l'espace* (Paris: Casterman, 1972), 41-62.

[70] Conference information is taken from MRAGO.mx004/54. By and large, these symposia were directed at a broad public, but Ragon seemed especially concerned that Beaux-arts students be interested.

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important.[71] From 1967-1970, the epicenter of activity shifted from Paris to Brussels, where the *Centre d'Études Architecturales* (CEA) hosted GIAP members who gave talks, and conducted workshops with students. Then, the cahiers of the CEA published a series of monographic issues comprising the texts and projects of Friedman, Sarger, Rottier [list more, and details.]

It seems important to underline the fact that the formation of GIAP did not constitute the beginning of an avant-garde movement, but rather seems like a culmination and condensation of approximately a decade of French speculative art, architecture and urbanism. Its members had been engaged in the production of utopian architectural projects for some time, and furthermore, their production did not change radically as a result of their participation in GIAP activities. Yona Friedman, for example, who describes the GIAP as little more than a meeting of Ragon's friends,[72] had been developing his ideas on mobile and spatial structures since 1957, when he formed his own international *Groupe d'Études d'Architecture Mobile* (GEAM), and circulated his famous manifesto, *L'architecture mobile* the following year.[73] The sculptor and prolific theorist Nicolas Schöffer (1912-1991) had been developing his architectural and urban ideas since the early fifties, and installed a permanent *Spatiodynamic Cybernetic Tower* in Liège and his prototype *House with Invisible Partitions* at the *Salons des Travaux Publics* in Paris in 1954 and 1956 respectively. At precisely the same time, the architect Ionel Schein (b. 1927), a pioneer in the field of prefabrication, was developing the first

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[71] Restany, "Ragon," 4. Ragon also wrote a "two-year report card:" Michel Ragon, "Le groupe international d'architecture prospective: deux ans d'activité," *Cimaise* 14, no. 79 (January-February-March, 1967): 42-51.

[72] Interview, April 2, 2002

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prototype house made entirely of plastics (1955-1956, in collaboration with Yves Magnan and Réne-André Coulon).[74] Ragon's achievement was to organize this diverse creative activity and orient it towards the current urban concerns of Paris, and Europe more broadly. His strenuous organizational and journalistic efforts managed to give a certain coherence to the various concerns of participants that might otherwise not have been apparent.

The membership of the GIAP was never huge, but it included many important figures from the French cultural scene, and international participants as well. Ragon was intent on the centralization of GIAP's administration in Paris, but he encouraged foreign participants to organize their own branches and activities. Walter Jonas and Justus Dahinden headed the German-speaking contingent, and Arthur Quarmby formed the British branch (the engineer Zygmunt Stanislaus Makowski seems to be the only other British participant). Non-founding architect members included Jean-Jacques Fernier and Alexandre Biro (who acted as the secretaries), Chanéac, Pascal Hausermann, Freï Otto, and Werner Rühnau. Engineering participants included: Makowski, Robert Le Ricolais (although I have not been able to determine his exact activities), René Sarger, and Stéphane du Château. Artists included: Victor Vasarely, Mathias Goeritz, Carl Nesjar, Pierre Szekely, Philolaos, and the architectural photographer Lucien Hervé. Critics included: Restany, Marc Gaillard, and Gérald Gassiot-Talabot. As mentioned above,

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[73] See Chapter 4 for a detailed history of this publication.

[74] The *Maison en Plastique* project was sponsored by *Charbonnages de France* and the *Houillères du Nord* (coal industries), and was exhibited in the *Salon des Arts Ménagers à Paris* in 1956, where it received widespread, and enthusiastic attention. See: "Breakthrough for Plastics; First All-plastics House is a French Experiment," *House and Home* 9 (April, 1956): 216-7. "L'emploi des matieres plastiques dans la construction," *L'architecture d'aujourd'hui* 28 (September, 1957): xix.

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from Parisian scientific circles, Ragon attracted the scientist Stéphane Lupasco, the biologist and doctor Jacques Ménétrier, and the psychiatrist P.C. Recamier. As mentioned previously, Jean Fourastié and Abraham Moles also participated. In addition, the Italian architectural critic, Manfredi Nicoletti was a member from 1966.

The GIAP had all but ceased activity by 1970. However, Ragon was not finished with the ideas that had been generated. An ambitious book was planned around this time that was to be called *Architecture et prospective (le dossier du GIAP)*, but it never appeared.[75] Though this project was aborted, Ragon went on to an even more ambitious GIAP-related publishing task. He immediately began to organize a series of books with the publishing house Casterman called "Mutations. Orientations," both favorite terms of Louis Armand, who was quoted for the frontispiece of each book: "The age of structures in movement is beginning."[76] Ragon added: "[o]ur generation is experiencing an anguishing yet passionate explosion of ideas, of morals, of all mental and social structures. The collection 'M.O'—Mutations. Orientations—proposes, by selecting its authors from the foremost specialists, to re-think every question, to actualize, and to form perspectives or a Prospective" [fig. 2.16].[77]

The range of this series of books was impressive, and although it initially followed the format set out by the GIAP symposia at the Musée des Arts Décoratifs, it eventually branched out. The first publication was Vasarely's *Plast-icité* which espoused

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[75] An outline of the book survives in the archive: MRAGO.mx002/31.

[76] Louis Armand and Michel Drancourt, *Plaidoyer pour l'avenir* (Paris: Calmann-Lévy, 1961), 16.

[77] This Quote appears in the frontispiece to every "Mutations-Orientations" publication (Paris: Casterman).

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his aesthetic and urban theories, many of which could be found in the earlier *Notes Brutes*. A definitive version of Friedman's *L'architecture mobile* then appeared, followed by a text by Ragon on art criticism, and Iannis Xenakis's *Musique, architecture*. But architecture became less the focus of the series than sociology and science. The scientist Stéphane Lupasco wrote a book for the series, as did Jean Fourastié, Abraham Moles, and even Henri Lefebvre! The itinerary of the *Mutations. Orientations* series was a fascinating post-May technophilic encyclopedia of the social and aesthetic complexity of the early seventies in France. Sturcturalism, Marxism, mathematics, music and drama theory, and modern art and architecture are all represented, though they never seem to sublate into any kind of coherent synthesis, as Ragon no doubt would have wanted.

At the same time that Ragon was forming the GIAP, he was also writing a novel that would be a kind of summary of his involvement (up to that moment) with utopian modernism. *Les quatre murs* (1966) can best be described as a melodramatic cross between Ayn Rand's *The Fountainhead* and Georges Perec's *Les Choses*.[78] Its protagonist, Julien (who shares many biographical details with Ragon), is a successful architect, living in a chic modern apartment of his own design, who has grown tired of the compromises and bureaucracy of his practice. As a respite, he resurrects an old student project that had been widely published and discussed in international journals prior to his ascension in the profession. The project is an ideal "linear city" called *Sylvia* (the name of Julien's first wife), resting along the banks of a river, and is essentially a synthetic work of art that is an amalgam of the tree-structures of Maymont, the mobile

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[78] Ayn Rand, *The Fountainhead* (Philadelphia: Blakiston, 1943); Perec, *Les choses: une histoire de les années soixante* (Paris: René Julliard, 1965). Trans. David Bellos as *Things* (Boston: Godine, 1990); Michel Ragon, *Les quatre murs* (Paris: Albin Michel, 1966).

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structures of Friedman, Schöffer's programmable spectacles, Chaneac's plastic cells, and Jonas's funnel cities:

> Just as the river penetrated into the city by way of canals leading to lakes and ponds, the countryside also infiltrated Sylvia. There was no strict separation between the country and the city, as there is with old cities. Constructed vertically, with suspended gardens, it was a city of several levels, which began with the underground levels for warehouses, circulation tunnels for cars and trains, and parking; it continued with the natural ground level, which was almost totally free of buildings, thanks to the system of supporting pillars [on which the city rested], and finally ended in the sky, where one could see the traces of the cables supporting plastic, ovoid dwellings. Sylvia constituted a sort of labyrinth that offered the stroller unexpected spectacles. It was a sculpted and painted city, and a spectacle-city. What is today merely an advertising stunt [*jeux de la publicité*] would be raised to the dimension of the sculpted and painted city, and controlled by a computer that could be observed from the exterior of its great glass cage like some post-historical animal.[...]
>
> What's more, on the blank exterior walls of the funnel cities, luminous and mobile paintings would be projected at night. Sylvia was simultaneously a new architectural complex, and a gigantic painted sculpture. There was no longer any need in this city for 'paintings' nor for 'statues.' The city itself, in its entirety, was conceived polychromatically and sculpturally.[...]
>
> The mobility of lodgings was maximized in every way in the structural system of Sylvia. Whether in the funnel cities, the arborescent cities (in which each 'building' constituted, because of its size, a truly autonomous city within the larger city), and all the other '*porte-maisons*,' the mobility of habitat was always studied with care.[79]

Julien, though he had formed a successful practice, been elected to head a studio at the ENSBA, and even appointed to a government planning commission, was haunted by the suspicion that Sylvia was a foolish, bohemian dream, a mere utopia that had no real relevance to the urban requirements of the here and now. Finally, in the depths of his existential despair, split between the utopian world of Sylvia, and the real world of the *grands ensembles* and ZUPs, Julien rediscovers the classic texts of Wright, Le Corbusier, Gropius, and Taut, and he realizes that to be a "researcher" is not simply to dwell in the

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[79] These excerpts were taken in mixed order from Ragon, *Les quatre murs*, 198-200.

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fantastic realm of science fiction, but it is to search concretely for new technical and social possibilities.[80]

Not exactly a masterpiece of modern literature, *Les quatre murs* demonstrates, perhaps better than his mainly descriptive or polemical essays, Ragon's sensibilities relative to the Prospective architecture he was so actively promoting during the sixties. But it also demonstrates the limitations of Ragon's approach. Ragon was more or less stuck in an operative/poetic mode that allowed him to perceive the concrete benefits of the projects he supported, but not their subtler theoretical underpinnings. Neither was he willing or able to perceive the potential ideological issues inherent to the cybernetic programmation of the urban environment. For Ragon, as for Julien, the new society was to be based upon the new powers of "industry, *affaires*, organization;" he believed, as did Julien that "the cathedrals of our times [...] are factories and airports."[81] In other words, Ragon lacked a critical perspective. Of course, he was critical of modern planning methods and policies, and of the contemporary state of the urban habitat. However, his absolute rejection of Marxism would leave him painted into an ideological corner, so to speak, by the end of the sixties, when he, and the other members of GIAP were implicated in the very society of spectacle they had been advocating, when the very notion of the Prospective came under fire.

From Utopian to Prospective Urbanism

While French society is becoming urbanized and Paris is being transformed, and certain powers, if not State power, are modeling France of the year 2,000, nobody is thinking about the ideal city

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[80] Ragon, *Les quatre murs*, 231-233.

[81] Ragon, *Les quatre murs*, 20.

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or what is happening to the real city. Utopia attaches itself to numerous more or less distant and unknown or misunderstood realities, but no longer to real and daily life. It is no longer begotten in the absences and lacunae which cruelly puncture surrounding reality. The gaze turns away, leaves the horizon, loses itself in the clouds, elsewhere. Such is the power of diversion of ideologies, at the exact moment when we no longer believe in ideology, but in realism and rationalism!

Henri Lefebvre[82]

At the heart of all the rhetorical variations on the notion of the ideal city, it was still the idea of utopia that was being questioned, taken apart, and re-assembled in various forms. Would this utopia be realistic or fantastic, technological or social, realizable or ideal, etc.? For Ragon, and the other members of GIAP, the answer was that the idea of utopia had to be replaced by the method of the *Prospective*. The Prospective was basically the French rendering of a tendency towards speculation about the technological and social transformations that might take place in the future.[83] Prospective analyses were essentially in the same vein as futurological studies like the American Arthur C. Clarke's *Profile of the Future*, and the Englishman Sir George Thompson's *The Foreseeable Future*.[84] Often using specific dates as lynchpins, these predictions could take the form of Clarke's assertion that by the year 2000 the planets would be colonized and artificial intelligence would be a reality, or on the other hand, Herman Kahn's

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[82] Henri Lefebvre, *Le droit a la ville* (Paris: Anthropos, 1968), 138. Published in English as Eleonore Kofman and Elizabeth Lebas, trans. and ed., "The Right to the City" in *Writing on Cities* (Oxford: Blackwell, 1996), 163.

[83] The best overview is the *Que sais-je?*: André-Clément Decouflé, *La Prospective* (Paris: PUF, 1972).

[84] I am citing these works particularly because they were published in French, and also influential in the GIAP circle. Clarke, *Profil du futur*; Sir George Thomson, *The Foreseeable Future* (Cambridge, Cambridge UP, 1955), published in French as *L'univers prévisible* (Paris: Calmann-Lévy, 1958).

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warnings about thermonuclear war.[85] Of course, Stanley Kubrick's *2001: a Space Odyssey* (1968), written by Clarke, stands as the most significant cinematic testament to this highly ambivalent fascination with the future. In the field of architecture, the most useful source in this regard does not come from the French context at all, but from Great Britain, where a young Charles Jencks published *Architecture 2000: Predictions and Methods* in 1971.[86] Though Jencks never mentions the term Prospective, he is keenly aware of the ideological and ethical issues at stake in the prediction of the future, as well as the cultural ramifications of the May, 1968 events in Paris.

The idea of the Prospective assumed both popular and intellectual forms in the French context. Dozens of books appeared claiming to predict the more or less near future, the world of the year 2000, agriculture in the year 2000, war in the year 2000, etc., all of which reflected a mixture of millennial and Cold War angst. Jean Fourastié, a GIAP participant, but also a respected economist, produced several of the most intelligent works in this vein.[87] France also hosted one of the most striking reactions against this futurology that, like other scientifically-oriented social movements of the sixties, eventually came under fire as simply another indication of the establishment's willingness to use quantification as political justification: "[f]or several decades, the pre-figuration of the future—which remains an idea fixed by *afictionados* of science fiction—has not ceased to haunt the spirit of men of action, of technocrats, or of

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[85] Clarke, *Profil du futur*, 251-252; Herman Kahn *On Thermonuclear War* (Princeton: Princeton UP, 1961), published in French as *De l'escalade* (Paris: Calmann-Lévy, 1966).

[86] Charles Jencks, *Architecture 2000: Predictions and Methods* (London: Studio Vista, 1971; New York: Praeger, 1971). American edition consulted.

[87] Jean Fourastié, and J. Vimont, *Histoire de demain* (Paris: PUF, 1956) is one example.

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politicians. Wielding speculative statistics, psycho-sociologists and socio-psychologists have set the *un-discipline* of the Prospective in motion."[88]

The philosopher Gaston Berger (1896-1960) first utilized the term Prospective to characterize the scientific prediction of the trajectory of technology and its impact on everyday life, and other social transformations such as population increase.[89] In 1957 Berger founded the *Centre International de Prospective* (clearly the principal namesake of GIAP), which published its review *Prospective* between 1958 and 1969. *Prospective* covered a wide variety of topics, ranging from agricultural technologies to sensory overload (*encombrement*) in modern urban populations. The eleventh installment was devoted to urbanism, and included contributions by people such as Paul Delouvrier, Paris' then-*prefet* and Jean Gottmann.[90] This issue demonstrates the orientation of prospective thought relative to the modern city. Like so many others at this time, contributors were concerned with population growth and uncontrolled urban development, the status of the poor and of under-developed countries, and the impact that science might have on these phenomena. The essays are mainly about the projection of demographic trends. Only Jean Gottmann addressed the possibilities of the future city in a direct way, and his message is an implicit critique of Ragon's notion of the architectural Prospective: "[o]nly twenty years separates us from [1984] and already publications abound on cities of the year 2000. It is no longer a question now of novels, but of serious

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[88] Georges Elgozy, *Le bluff du future: demain n'aura pas lieu* (Paris: Calmann-Lévy, 1974), 7.

[89] A good overview of Berger's thought can be found in his *Phénoménologie du temps et prospective* (Paris: PUF, 1967).

[90] "L'urbanisation," *Prospective*, no. 11 (June, 1964): entire issue.

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works of scientific character, prepared by experts, discussed and approved by committees composed of important people."[91]

Predicting future transformations was one thing, but another aspect of the Prospective was speculation about how society and the individual could accommodate unforeseen changes. One of the key texts in this regard, and one that had a great deal of influence on Ragon, was Louis Armand's and Michel Drancourt's *Plaidoyer pour l'avenir* (1961). Like so many other essays in this genre, this text attempted to gauge the impact of technological progress on human existence. It argued that the incredibly rapid rate of technological change, characteristic of the second phase of the industrial revolution, called for new social structures. For Armand, the idea of the social structure was administrative and economic—it was a matter of organization. Thus, new methods of production and communication called for new types of social organization. But in the current stage of the industrial revolution things were beginning to speed up too quickly for traditional organizational structures to keep pace.[92] The solution, for Armand, was the development of more "supple" organizational structures: "[...] it is a question, not of

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[91] Jean Gottmann, "De la ville d'aujourd'hui à la ville de demain: La transition vers la cité nouvelle," *Prospective*, no. 11 (June, 1964): 171-180: 171. Gottmann coined the term "megalopolis" in his study sponsored by the Twentieth Century Fund of the unchecked urban sprawl of the Eastern seaboard of the United States; see his *Megalopolis* (New York and Cambridge: Twentieth Century Fund and MIT Press, 1961). Although he would likely have considered the designs of GIAP members to be unrealistic, Gottmann was involved with Constantine Doxiadis's Ekistics movement, and participated in at least one of Doxiadis's Delos cruise symposiums in 1967: Arnold Toynbee, *Cities on the Move* (London: Oxford UP, 1970), vii-viii. More generally, of course, the topic of unchecked population growth was a leitmotif of the postwar period. Numerous UNESCO studies addressed the crisis, and it was a prevalent theme at the 1964 New York World's Fair, for instance. For a good summary of these concerns, see also: Donella H. Meadows, et al., *The Limits to Growth: a Report for the Club of Rome's Project on the Predicament of Mankind* (New York, Universe Books, 1972).

[92] Armand, *Plaidoyer pour l'avenir*, 19. Armand was the principle author of the work, and Drancourt a collaborator, therefore I refer only to Armand's name in the abbreviated citations.

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determining laws, but orientations which can better conform to structures in a constant state of evolution. The formulas of yesterday, solidified in their details, must be succeeded by lines of action around which modalities of supple application will develop."[93]

It is not difficult to see how Armand's message would appeal to Ragon, and those designers looking for ways to construct urban infrastructures that could evolve according to future, sometimes unforeseeable, conditions. It is also important to point out here Armand's rejection of any kind of traditional liberal or Marxist critique of these transformations. For him, the second industrial revolution was so far removed from the first, and so fundamentally based upon technology and novel economic conditions, that the rhetoric of class struggle and alienation from the agricultural roots of humanity had been superseded; indeed, the whole question of ideology had been largely superseded.[94] Though Alain Touraine would write a compelling rebuttal to theories like Armand's in his *Société post-industrielle* of 1969, Armand's pro-technology stance had a broad appeal. Clearly, this is the conception of Prospective architecture that Ragon had in mind when naming his group—an apolitical urbanism of supple infrastructures that could accommodate technological evolution.[95]

By appealing to the more scientific Prospective—as opposed to the utopian—designation, Ragon, et al. could assert that they were not simply sketching

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[93] Armand, *Plaidoyer pour l'avenir*, 20.

[94] Armand, *Palidoyer pour l'avenir*, 17-18.

[95] As Ragon has stated, GIAP represented the first instance of the terms architecture and Prospective being used together: Ragon, *Prosepective*, 342.

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fanciful environments, but contributing to a real discourse about the future of urban spaces. Thus the sculptor and urban theorist Nicolas Schöffer could state:

> The Prospective, veritable science of the exploration of future phenomenon, comes into existence, and is already evident everywhere. In effect, within the general process of [social] progression, a new phenomenon reveals itself: its acceleration is more and more apparent. At the real level of this phenomenon, we are capable, for the first time in our history, of objectively foreseeing the indices of evolution in diverse areas, and even of making calculations and of preparing prospective programs that can actually determine our progression.[96]

For Schöffer, this "new phenomenon" was the cybernetic control of urban space, but for the moment it is sufficient to note that the idea of the Prospective lent an objective connotation to projects that might otherwise have simply appeared fanciful.

But the rejection of the aura of the utopian was also a political statement, or at least a statement about the desire to be apolitical. For Ragon and other members, the politics of GIAP were simply that they believed the state should finance urban projects, and that this would require more or less total municipal land ownership—common refrains among architects during this period.[97] They stopped short of discussing their own political or ideological presuppositions, or even acknowledging that they had any, preferring instead to appeal to a generically democratic conception of man in industrial or post-industrial society. While this notion of man can be seen in Le Corbusier's and CIAM's discourse as well, it takes on a different connotation in France in the 1960s when so many intellectuals were looking for alternatives to Marxism.

It would be difficult to imagine a worse time for Ragon to have systematically excluded the critical conception of utopia from GIAP's program. For, as the sixties

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[96] Nicolas Schöffer, *La ville cybernétique* (Paris: Tchou, 1969), 11-12.

[97] Letter from Ragon and George Patrix to the "Groupe Ville" [a research group based in Paris], MRAGO.MX.005/52.

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progressed, and the aura of rationalism lost its appeal, a revitalized Marxism once again rallied the intelligentsia. The most marked expression of this is of course the uprisings in May, 1968, which were marked by students and workers taking to the streets in a mass rejection of the technocracy of the State and the domination of industry in the sixties, armed with slogans derived from the Marxist theories of Debord and Lefebvre. After May, It was largely to the latter that the architectural establishment, battered and confused, its educational system in disarray, and the *grands travaux* of the sixties rejected, turned.

Within architectural theory and education, the most marked shift to take place after May, was the move towards inter- or pluri-disciplinarity, either in the form of different class offerings for students, or the composition of the "teams" that advised the production of new towns, etc.. Of course, this trend had been developing before this date, and was being adopted in almost every country. In France, sociology seemed to be the most relevant sister-science to an architecture devoted to the progressive reconsideration of habitat. At the conceptual epicenter of this phenomenon was Henri Lefebvre, whose incredible influence was multi-faceted. Not only did Lefebvre serve as consultant on numerous interdisciplinary advisory teams for *grands travaux*, he supported architecturally-oriented sociological research at the [sociology institute], and perhaps most importantly published a series of books and essays that would have a direct impact on the way architects and intellectuals viewed urban space.[98] However, it was not

[98] Kofman and Lebas discuss Lefebvre's participation in the planning of the New Town of Creteil: 36. See also Mcleod, "Henri Lefebvre's Critique of Everyday Life": note, p.25. Also, Lefebvre was an active participant in the colloquia of the *Construction et humanisme* group that held meetings in 1969 and 1970 in Cannes. Perhaps the most important study produced by the Institut de sociology urbaine was: Nicole Haumont, *Les Pavilionaires* (Paris: Institut de sociology urbaine, 1966), which studied the French fascination with the suburban home. The appeal of the

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Lefebvre's critique of technological rationalism that undermined Ragon's program, rather it was Lefebvre's rich (though not unproblematic) elaboration of contemporary utopian theory, as it related to urban space, that demonstrated the limitations of GIAP's adherence to the prospective model.

However, a more compelling reason for an analysis of Lefebvre's urban writings during this period suggests itself, not because of the obvious differences between his thought and that being elaborated by the Spatial Urbanists, but because of the similarities and convergences. Both, after all, were attempting to describe the utopian possibilities of the conscious planning of urban space, even if the rhetoric of utopia was banished from the latter's discourse. Both found inspiration in the imagery of science fiction (though this was qualified in both cases), and in the end, both argued for an urban space characterized by freedom, play, and what Lefebvre would formulate as "appropriation" on the part of inhabitants.[99] Additionally, it seems like a worthy undertaking to reread Lefebvre's urban thought during this period because, while his engagement with and critique of modern planning is well known, contemporary critics and historians have tended to regard his more operative conclusions as something of an oddity, or to overlook them altogether.[100] Clearly, it has been easier to relate to his condemnations of

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individual home and the (sub) urban vision it implied for the average French person was obviously a very problematic development insofar as it constituted an implicit critique of rationalist planning, but was also perceived as being retardataire and/or reactionary by Marxists, and of course architects and urbanists as well.

[99] The idea of appropriating activity in the urban environment is integral to Lefebvre's notion of the city as œuvre. See Right to the City: 65-85.

[100] For discussions of Lefebvre's urban thought, see Kofman and Lebas, "Lost in Transposition," and Mary Mcleod, "Henri Lefebvre's Critique of Everyday Life: an Introduction," in Steven Harris and Deborah Berke, eds., *Architecture of the Everyday* (Princeton: Princeton Architectural Press, 1997), 9-29. McLeod seems surprised by the fact that Lefebvre praises the liberating aspects of Constant's *New Babylon* project, while failing to note its de-

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technocratic planning, than to his endorsements of modern urbanism, and almost eccentric embrace of science fiction utopias and calls for "ludic spaces."[101]

But, unlike his counterparts in the radical avant-garde groups, the Situationist International and Utopie, Lefebvre was not afraid to go beyond merely negative critique, and to try to explicitly formulate ideas (if not programs) for what the role of urbanism might be in the transformation of everyday life.[102] First of all, Lefebvre did not reject avant-garde architecture and urbanism. He praised the vision (if not the results) of the *Athens Charter*, and the sociological aspects of more recent housing experiments, although he later revised his opinion of Le Corbusier's activities as an urbanist.[103] Indeed, in his various contributions to architectural journals in the late sixties, and elsewhere, he insisted on the necessity of conscious planning, though not of the crudely analytical or rationalist variety.[104]

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humanizing qualities such as "its overtones of behavioral engineering or its obliteration of any sense of tradition, locale, and domesticity"; McLeod, "Henri Lefebvre's Critique of Everyday Life," 21.

[101] Lefebvre viewed play and appropriation as constitutive elements in the reconsideration of urban everyday life. For his science fiction references see *Right to the City*: 160-161.

[102] For an interesting discussion of Lefebvre's relationship to the SI, and the dissonance caused by his approval of *some* planning schemes, see Jean-Louis Violeau, *Situations construits* (Paris: Sens & Tonka, 1998), 72-86. Another such discussion is found in "Lost in Transposition," 10-13. Also, McLeod discusses Lefebvre's criticism of the Utopie group as being totally negative, and unwilling to make any programmatic commitment; "Henri Lefebvre's Critique of Everyday Life," 19-24.

[103] Henri Lefebvre, "Utopie experimentale: pour un nouvel urbanisme," *Du rural à l'urbain* (Paris: Anthropos, 1970), 129-140: 133-134. This essay is a reprint that originally appeared in 1961 in the *Revue française de sociologie*. Lefebvre's later comments on Le Corbusier are taken from a 1986 interview, "No Salvation away from the Center?," in *Writings on Cities*: 205-208. Cited in McLeod, "Henri Lefebvre's Critique of Everyday Life," note, p.24.

[104] Henri Lefebvre, "Propositions," *L'architecture d'aujourd'hui* 38, no. 132 (June-July, 1967): 14-16.

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As has been pointed out,[105] Lefebvre was friends with Constant, whom he considered the "prototype" among the "modern utopists" and a "genius director," and was enthusiastic about the *New Babylon* project.[106] About this, he says: "it is a concrete utopia, because automation is already in place, because non-work is already in place, because a functionalism that opposes monuments to buildings and that constructs buildings intended for work, or buildings intended for sleeping, etc., is ridiculed."[107] But Lefebvre was not as enthusiastic about Constant's contemporaries, the other "modern utopists" from whom Constant appeared to have distanced himself. And it is significant that, in articulating this distance (though not very clearly), Lefebvre invokes the term "prospective": "Nieuwenhuys was somewhat deluded by the proximity of non-work and pleasure: these problems occurred to him in a somewhat abstract and obsessive manner, but, from around 1953-1954, he believed in their importance. He was not alone. There was at this time a sort of technological vertigo; Nieuwenhuys represents the alternative side of this phenomenon, the side of the lived and not of the prospective."[108]

I do not intend to recount all of Lefebvre's various uses of the term

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[105] Mcleod, "Henri Lefebvre's Critique of Everyday Life," 20-21.

[106] Henri Lefebvre, *Le temps des méprises* (Paris: Stock, 1975), 243.

[107] Lefebvre, *Le temps des méprises*, 244.

[108] Lefebvre, *Le temps des méprises*, 244. This rather inarticulate passage seems to be critiquing the widely-held view that automation could lead directly to liberation. Lefebvre concludes that Constant, by emphasizing the "affective" (p. 243) aspects of the liberating potential of technology, avoids the technocratic, and overly-constraining Prospective approach. It is uncertain, however, that Lefebvre is here referring to Ragon's circle; the rhetoric of the Prospective, as discussed above, was very much in the air during the 1960s. However, given that the statement was made in the context of a discussion of modernist urban utopias, and that Lefebvre was almost certainly familiar with Ragon's work—via the publication of Lefebvre's *La pensée marxiste et la ville* (Paris: Casterman, 1972) in Ragon's "Mutations.Oriéntations" series of books—such an allusion seems possible.

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"prospective."[109] Suffice it to say, that for him it represented the tendency of modernist utopias to consider technology and rationalism ends in themselves, thus precluding genuine social change. For Lefebvre, avoiding the "technological vertigo" of the modern utopia was a matter of constantly analyzing, dialectically, the structures of everyday life, and incorporating those analyses into the planned urban milieu.[110] But if the former operation (the critique of everyday life) has proved to be a fundamental component of post-Marxist thought in the latter half of the Twentieth Century, the latter operation (formulation) has proved much more problematic, and has subsequently been neglected in contemporary accounts of Lefebvre's work.[111]

What was Lefebvre's conception of what the contemporary city should be during this period? The answers to this question can be pieced together through various writings from the sixties. By far the most significant of these was *Le droit à la ville* [*The Right to the City*] (written in 1967, published in 1968).[112] Following the success of this text, *Du*

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[109] Interestingly, Lefebvre had presented a paper at a colloquium at the Centre de Prospective on October 29, 1962: "La vie sociale dans la ville," in *Du rurale à l'urbain*: 145-152.

[110] It is, of course, Lefebvre's notion of "everyday life" that has been the most influential—much more so than his urban writings, although the two cannot be completely separated. See Henri Lefebvre, *Critique de la vie quotidienne*, vol. 1 (Paris: Grasset, 1947), trans. John Moore as *Critique of Everyday Life* (Verso, 1991); *La vie quotidienne dans le monde moderne* (Paris: Gallimard, 1968), trans. Sascha Rabinovitch as *Everyday Life in the Modern World* (London: Athlone, 2000); *Critique de la vie quotidienne*, vol. 3 (Paris: L'Arche, 1981).

[111] A particularly relevant example of this is the previously cited compendium, *Architecture of the Everyday*. It is symptomatic that even in an architectural text directly inspired by Lefebvre's work, his pronouncements about urbanism are more or less systematically excluded. Why, for instance, choose to re-publish his fairly obscure essay "The Everyday and Everydayness" and not one of his texts treating the modern city? The answer, clearly, is that the latter texts fall into one of two categories: critiques of New Towns (not really relevant for the editors), or more operative pronouncements, that call for interdisciplinary work towards a ludic, and symbolic social space (clearly too dated for the editors).

[112] Kofman and Lebas point out that the text influenced not only public and academic opinion, but public policy as well (1996), 6.

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rurale à l'urbain [*From the Rural to the Urban*] was published, which comprised previously published essays, including Lefebvre's earliest texts to treat modern urbanism and the *villes nouvelles*, from around 1960.[113] Following these texts, several other books elaborated and refined his urban thought.[114]

As implied above, there is a certain tension that exists between Lefebvre's critique of the modern city and his formulation of its future direction; at times he, like so many of his contemporaries, seems caught up in the very techno-euphoria that he so often denounces. Lefebvre's critique of modern urban space as an embodiment of the logic of capitalist and/or neo-capitalist exchange is well known, but his more historically-contingent (in other words dated) statements about potential or future cities are interesting in this context, as they demonstrate his proximity to modernist, avant-garde discourse. Vis-à-vis Spatial Urbanism and the GIAP, Lefebvre's writings constitute both a critique, but also a contextualization of the former's utopian or Prospective formulations. To conclude this section, I would like to pick up on some of Lefebvre's observations about the modern city that might shed light on this state of affairs.

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[113] Henri Lefebvre, *Du rurale à l'urbaine*. This begins with an essay from 1949, which deals with rural sociology, a topic that preceded Lefebvre's analyses of the modern urban environment. Lefebvre's first analyses of Lacq-Morenx (a New Town near his home in the Southwest of France) have become famous as the most systematic theoretical rejections of the social conditions of the *grands ensembles*. See Henri Lefebvre, "Les nouveaux ensembles urbains," *Revue française de sociologie* 1, no. 2 (April-June, 1960): 186-201. This text is a critique, not only of the obvious de-humanizing aspects of this type of modern planning, but of the "operational" sociological methods that produce it.

[114] See "Espace et politique" in *Le droit à la ville suivi de Espace et politique* (Paris: Anthropos, 1972). Later, the text *La production de l'espace* (Paris: Anthropos, 1974), trans. Donald Nicholson-Smith as *The Production of Space* (Oxford: Blackwell, 1991), became the main text expressing Lefebvre's thinking on the city and modernist conceptions of time and space, and certainly one of his most influential works in the English Language, following its belated translation.

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For Lefebvre, the modern city was the physical embodiment of the suppression of the "urban" by state and corporate ideology or strategies. These were figured by the epistemology of rationalist planning that, in relying too strongly upon empiricist methods, separated populations across the terrain, distancing workers from places of work, constructed buildings for singular functions, and neglected the need for the social, resulting in the death of the street, for instance, as a space of genuine social activity.[115] The result was a dehumanized, monotonous, ugly urban landscape that reflected the coldness of the rationalist assumptions underlying it. Furthermore it quelled, though not entirely successfully, the authentic social life that was the *raison d'être* of the "urban."

For Lefebvre, the "urban" was the privileged space of modernity (even if Marx had neglected the topic),[116] arising as it did from all the possibilities and contradictions of humanity and technology. Rationalist planning, based upon the mandates of industrialization and state control, systematically suppressed the urban, and therefore it was precisely this dynamic dimension (temporal and spatial) that it was necessary to restitute.[117] Lefebvre thus posited the city (the urban) as an *œuvre*—a mode of production characterized by genuine creativity and social need (and therefore comprising "use value" in the Marxian sense)—as opposed to the product (exemplary of "exchange value").[118] This urban dynamic entails a fundamental give and take between structures of

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[115] These themes are recurrent in the sources cited above, but a particularly interesting discussion of the social function of the street is found in "Propositions," 15.

[116] "L'urbanisme aujourd'hui: mythes et réalités." *Les cahiers de l'institut du Centre d'Études Socialiste*, nos. 72-73 (September-October, 1967): 106.

[117] For Lefebvre's most concise description of these issues see *Right to the City*, 177-181.

[118] Lefebvre, *Right to the City*, 65-75.

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restraint and oppression, and spontaneous, creative acts of appropriation on the part of inhabitants.

Incorporating these considerations, Lefebvre sketched the outlines of a possible city—one for which planning and technology were essential components, but only insofar as they were considered means to an end—the urban. His conclusions are surprising for a Marxist, but not so much for a progressive intellectual working in the 1960s in Paris. Presumably inspired by Constant's *New Babylon*, but transforming it somewhat, Lefebvre describes an urban milieu composed of "multi-functional or even trans-functional edifices."[119] He continues:

> The utopian imagination introduces a revolutionary ferment into conceptions arising from realism, from functionalism, or from formalism.
>
> It is thus that one can easily conceive of a new city, the organizational centers of which would be game areas and rooms, theaters, cinemas and cafés, encircled by promenades and parks around which are grouped residential quarters and places of work. Utopia? Perhaps.
>
> Equally, one can imagine a street animated by stores and boutiques, grouped together in the manner of souks, the buildings constructed in appropriate forms, under which pass cars.[120]

Elsewhere: "The ideal city would involve the obsolescence of space: accelerated change of abode, emplacements and prepared spaces. It would be the *ephemeral city*, the perpetual *œuvre* of the inhabitants, themselves mobile and mobilized for and by this *œuvre*."[121]

For all intents and purposes, Lefebvre here describes the Spatial city: open spaces, animated by social activities and separated from automobile traffic, constructed in (or

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[119] Lefebvre, "Propositions," 15.

[120] Lefebvre, "Propositions," 15-16.

[121] Lefebvre, *Right to the City*, 172-173.

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above) an existing city,[122] and devoted to mobility and transformation. We can perhaps explain Lefebvre's willingness to place commercial activities at the center of this new city by the fact that we was addressing an audience composed mainly of professional architects and planners (the readers of *L'architecture d'aujourd'hui*), and thus he was adopting a pragmatic stance in this instance. But the descriptions of ludic spaces as the structuring element of the city, made possible by the reduction of labor via technology, are the points of convergence between Lefebvre's views and those of utopian designers during the same period. If there were any doubts about this, Lefebvre's approbation of the design of the 1967 Montreal Exposition, as a potentially liberating use of technology, should eliminate them.[123]

However, having brought Lefebvre's thought as close as possible to that of the members of GIAP, it is necessary to re-install the ideological distance that separated them, because in asking "Perspective or Prospective?" Lefebvre concluded definitively in favor of the former.[124] For Lefebvre, the Prospective planning of the "Paris of the year 2000" was an exercise in the substitution of the means (rationality, statistics, technology, etc.) for the ends (the urban as *œuvre*). The result was, for Lefebvre, the worst kind of utopianism "which does not utter its name, covers itself with positivism and on this basis

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[122] In the same article, Lefebvre states that it is preferable to utilize existing cites, instead of constructed "isolated ensembles"; Lefebvre, "Propositions," 16.

[123] Lefebvre, *Right to the City*, 173. GIAP also considered the Montreal Expo a great indication of the potential of prospective architecture. See George Patrix, "The Triumph of Prospective Architecture in Montreal," *Cimaise* 14, no. 80-81 (Apri-May-June-July, 1967), 82-88.

[124] See chapter entitled "Perspective and Prospective?" in Lefebvre, *Right to the City*, 160-174.

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imposes the harshest constraints and the most derisory absence of technicity...."[125]

Therefore, though they found themselves in the same transitory space, the Spatial Urbanists and Lefebvre were ultimately moving through it in opposite directions. While Lefebvre was attempting to enliven and politically animate the sterile disciplines of urbanism, philosophy, and sociology with insights garnered from the avant-garde, the members of GIAP were attempting to bring the avant-garde back to earth, using the very conceptual tools that Lefebvre was rejecting: rationality and industrialization. (It is difficult to determine how familiar Ragon was with Lefebvre's work in the sixties. He knew of it certainly, but his passing references simply characterize Lefebvre's critique of technology as "pessimistic."[126])

Lefebvre was never totally successful in conveying his ideas to the architectural community, or the latter was never totally successful in incorporating them, despite his influence after 1968. On those occasions when he met with architects, the dialogue seemed to run at cross-purposes. Lefebvre's view that "architecture as art and technique also needs an orientation. Although necessary, it could not suffice. Nor could architecture set and define its own aims and strategy" [127] would unsurprisingly make many architects uneasy, especially those in the French context who rejected his separation of the practices of architecture and the urban, which they had tried for so long

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[125] Lefebvre, *Right to the City*, 151.

[126] Ragon, *Où vivrons-nous demain?*: For Ragon, the trickle down of advanced technology (military and space exploration) into consumer goods and everyday activities was positive, but Lefebvre critiqued this notion of "*retombé*" or fallout as he sarcastically called it: "No cosmic exploits when millions on earth are starving! No throwing colossal resources into space when the problems of the city and the countryside are not resolved!" Henri Lefebvre, *Vers le cybernanthrope* (Paris: Denoël, 1971), 10-11.

[127] Lefebvre, *Right to the City*, 173.

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to synthesize.

This became explicit on the occasion of a series of public debates on the topic of urbanism held by the *Centre d'études socialistes* in 1967. Unfortunately, Lefebvre and Ragon were invited to participate on two different panels in the cycle. Despite this, these panels, the proceedings of which were published, offer a valuable, contextualized indication of the lay of the land in the late sixties regarding the social (and utopian) aspects of urbanism. The first panel was a debate taking place early in 1967 between Lefebvre, the famous urbanist and architect Michel Ecochard, and the prolific Paris architect Jean Balladur, (also a contributor to Ragon's *Les visionnaires d'architecture*).[128] The following panel, held on May 10, 1967 included Ragon, ex-GIAP member Ionel Schein, and the geographer, André Haumont.[129]

Without summarizing the entirety of these debates, we can establish that Lefebvre's notions of urban appropriation, etc., based as they were in his particular Marxian orientation, were simply not understood by the professional architects and urbanists participating. Even Balladur, by all accounts an intellectual among architects (he was an old student of Jean-Paul Sartre, and carried his existential lessons to his conception of architectural design), angrily rejected Lefebvre's demotion of architecture to a mere tool in the service of a higher philosophical goal.[130] In this first debate, Balladur and Ecochard insisted upon the perennial themes of the public control of land, and the need for comprehensive planning, while Lefebvre had another goal entirely. The

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[128] Jean Balladur, "L'aventure architecturale," in Ragon, *Les Visionnaires*, 127-131.

[129] "L'univers concentrationnaire ou urbanisme socialiste?," *Les cahiers de l'institut du Centre d'Études Socialiste*, nos. 74-75 (January, 1968): entire issue.

[130] Balladur, "L'urbanisme aujourd'hui," 13.

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second debate did not clarify matters at all, although Schein appeared to be the closest sympathizer with Lefebvre in insisting that "socialist urbanism is evolutive, but it is neither utopic nor visionary. It is reality."[131] Ragon, apparently refusing to engage in political or ideological discussions, simply re-asserted the urban proposals of other GIAP members, such as Jonas, Friedman, and Maymont, as a kind of *deus ex machina*, obliterating the problems of contemporary society with future solutions.

Despite the record of these debates, the impact of Lefebvre's thought on French architectural theory and practice during the 1960s remains unclear. Certainly, after 1968, everyone agreed that the "right to the city" was of fundamental importance. The rhetoric of humanism and of participatory planning, the implementation of interdisciplinary policies in the educational system, the ubiquitous demands for "quality over quantity," etc.—all these things could be traced at least partially to the influence of Lefebvre. However, also post-1968, the very idea of the modern utopia was thrown into serious doubt, and in most cases rejected altogether. Even Lefebvre dropped his ideas about "experimental utopia" as a guiding methodology.[132] Thus, Lefebvre's urban thought was assimilated to a diversity of political and theoretical tendencies within architecture at the beginning of the 1970s, from the *autogestion* (or self-design) movement to Philippe Boudon's epistemological studies, and it is not possible to discern a singular point of impact, much less the appearance of a real "architecture of the everyday."

I have lingered here over Lefebvre's work, however, not because it produced a specific or singular result in French architecture at the end of the sixties, but rather

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[131] Schein, "Univers concentrationnaire," 14.

[132] Lefebvre, *Right to the City*, 151.

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because it seems central to the theoretical fragmentation of the discourse at this time. It is clear that the status of utopia was also a central issue, and I hope to have demonstrated here that Lefebvre's formulation of it, not simply as a negative critique, but as an image of what the ideal city might be, expresses the vicissitudes that were eventually to tear it apart. Lefebvre himself described these vicissitudes in his formulation of the perspective utopia over and above that of the prospective—the "living" over and above the analytical. But the "technotopias" that Lefebvre and so many other critics denounced during this period had a more complex relationship to both utopian theory and architectural practice than was acknowledged, as I will discuss in the next chapter.

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Chapter 3:
Paris in the Tertiary Era

The Tertiary Era as the Post-Industrial Era

In one of the final scenes of Jean-Luc Godard's 1967 film, *2 ou 3 choses je sais d'elle* (Two or Three Things I Know about Her)—which is among other things a meditation on the new Paris of the *Peripherique* and *grands traveaux*—Godard manages to condense many of the social and intellectual concerns of the period into a single image. Here, in the grass, are a number of laundry detergent boxes placed in such a way that their geometric arrangement evokes the slabs and towers of the housing blocks that form the backdrop for the film [fig. 3.1].[1] The primary colors of the packaging speak the popular (American) language of the commodity, while their placement next to each other evokes the rationalist reconstruction of urban space that often preoccupied Godard. Here, Godard mocks both the Athens Charter-derived planning of the *villes nouvelles*, and the polychromed plasticity that was supposed to animate their social spaces, implying instead that the "ineffable spaces" of modernism are animated more by the logic of commodity fetishism than the sociological or aesthetic planning of the urban environment.

But Godard was no innocent bystander in the context of the development of modernism at this moment. Even in this film, the director's textureless cinematographic style, the deadpan delivery of the actors, and the visual plenitude the camera extracts from the repetitive facades of various *grands ensembles* is striking, and alludes (consciously or not) to the conceptual and aesthetic concerns shared by the New Wave,

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[1] Sylvère Lotringer evokes this image in his essay, "Consumed by Myths," *Premises*: Invested Spaces in Visual Arts, Architecture, and Design from France, 1958-1998 (New York: Guggenheim Museum, 1998), 24-25.

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and the "new architecture" in the post-war context. The resulting ambivalence between the style and the content of the film seems to enhance, rather than undercut Godard's critique of the "assassination of Paris."[2] Unfortunately, the architectural establishment did not benefit from the possibility of the adoption of such a subtle position—modern architecture and planning were largely perceived as failures well before 1967, and those who sought to defend them were on increasingly unsteady ground as the decade progressed.

It must have been profoundly disconcerting to witness the ease with which the original utopian impulses of the architectural avant-garde apparently slid into alignment with the technocratic ideals and social changes of the Fifth Republic, and post-industrial society more generally. The mass migration to capitals, the rise of a new middle class (economically empowered, but less class-conscious than ever), the potential and danger of new technology—all of these factors nurtured the adoption of modernist building practices and urban planning methods internationally. In France, as any history book tells us, the *trente glorieuses* witnessed the industrialization of agriculture, the filling and expansion of the *banlieues*, and the birth of the *cadres*, the new managerial class who threatened to subsume their more aristocratic forerunners in the administrations of industries and the government alike. These shifts in labor and class dynamics were often referred to as the move towards a "tertiary" society, in which organization and administration would characterize production much more so than agriculture (the primary) or "industry" in the 19th-century sense of the word (the secondary).

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[2] This phrase is a reference to the title of Louis Chevalier, *L'assissinat de Paris* (Paris: Calmann-Lévy, 1977), translated as The *Assassination of Paris*, trans. David P. Jordan (Chicago: University of Chicago Press, 1994).

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Ragon embraced the new society wholesale, with only a touch of appropriate reticence about the atomic age:

> Since the end of the era of nomadic hunter-gatherers and the advent of agriculture, we have lived in a fundamentally rural civilization. And the new civilization that is in the process of development will be predominantly urban. We move ineluctably from a primary (or agricultural) civilization to a tertiary civilization. We still live in a period of transition in which the secondary (industrialization) can be seen increasing from 10 to 40%. At the same time, the primary declines from 80 to 30%, and the tertiary rises from 10 to 30%. In the future, the tertiary (which is to say trade, bureaucracy, and by the same token the menace of dictatorial technocracy) will be 80%, the primary and the secondary will fall to 10%[...]
>
> It would be absurd to think that the considerable change that we have described would find its solution in the alignment of cubes and of parallelepipeds. The architecture of the city of tomorrow will certainly not closely resemble that of yesterday, which was made for pedestrians and horses. A new city should respond to the epoch of interplanetary rockets and, if one envisions it from an exclusively military point of view, should be completely underground. We hope to still be able to benefit from the sun, space, and nature, as the visionary architects to whom this book is dedicated promise us.[3]

For Ragon and many others, the tertiary era, though not without its dangers, was to be one of plenitude and leisure. Via technology, labor would be decreased in intensity and duration, resources would be more equally distributed, and as a result the general quality of life would be enhanced.[4] These predictions led, within the architectural profession, to a boom in vacation and leisure design—second or holiday bungalows, massive sporting facilities and resorts, etc.. It is also clear from Ragon's writing during this period that he saw a profound link between the characteristics of the tertiary society and the methods proposed by Spatial Urbanism for reconfiguring the city. With its emphasis on standardized cells and the free flow of all kinds of traffic (vehicular, human, and economic), raising the city to the "third-dimension" seemed like an appropriate

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[3] Ragon, *Où vivrons-nous demain?*, 16-17. Ragon's description of the Tertiary era here was likely taken from Jean Fourastié's discussion in *Pourquoi nous travaillons* [fig.].

[4] See Jean Fourastié, *Les 40,000 heures* (Paris: Denoèl/Gonthier, 1972).

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evolutionary step in a society increasingly based upon the concatenate logic of administration.

Many others were coming to similar conclusions, albeit at more modest scales. In terms of building activity, the State, and the "institution" of modern architecture were both searching for new means of integration and continuity in this new era. At every "scale," from individual buildings, to the building's relationship to its quarter, the quarter to the city, to the region, and ultimately to the territory, adequate links were sought that could ease the congestion of accumulated traffic, people, and information. The rationalist aspects of modern architecture and planning seemed to naturally coincide with the goals of State and private administrations seeking to maximize the efficiency of their bureaucratic operations and physical configuration on the ground.

It is therefore impossible to separate the rise of modernism in France in the post-war period from the troubled political history of reconstruction and the *grands traveaux* in the following decades. New materials and production methods associated with the modern movement were the best way to quickly construct effective, low-cost housing. In addition, the technologically progressive stance of the administration under Charles de Gaulle was drawn to the objective methodology of modern planning. Thus, it is not surprising that at the most basic level, the "modern style" became inextricably associated with public works and by extension what was perceived as the State's increasing similarity to a Taylorized, industrialized or post-industrialized, capitalist complex.

The "horrors and comforts of functional architecture" became the most evident symptom of the "one-dimensional society," or what Alain Touraine called, even more

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ominously than Marcuse, the "programmed" society.[5] Before and even more so during and after May 1968, it became increasingly common to see modern architecture as complicit in the oppressive and corrupt practices of the State and private interests. Furthermore, the origins and development of this perception have a direct bearing on the reception and eventual rejection of Spatial Urbanism. In a profound sense, space itself was at the heart of the intellectual and popular critique of the tertiary era. In the most basic sense, this critique employed a diluted version of the Marxist postulate that "exchange value" had replaced "use value"; only in the post-industrial society, this essential logic had transcended its industrial context and had begun to pervade every aspect of life. Thus, the quantifying activity of technocrats, the organizational activities of the *cadres* or middle managers, and the analytical methods of the Structuralists increasingly came to be seen as analogous, even inseparable activities in their respective realms of modern society—science, industry, and the academy.[6]

The most influential formulations of this critique were undoubtedly Marcuse's *One-Dimensional Man*[7] and Debord's *Society of the Spectacle*, but it seems worthwhile to look beyond these seminal works to examine the origins of these ideas in the fifties and sixties. To begin with, the French context was markedly different from the Anglo-American, due to many factors such as different business models, and especially the presence and power of the State in private enterprise. Certainly, what Burnham described

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[5] Herbert Marcuse, *One-Dimensional Man* (Boston: Beacon Press, 1964; 1991 edition cited), 8; Alain Touraine, *La société post-industrielle: Naissance d'une société* (Paris: Denoël, 1969); trans. Leonard Mayhew as *The Post-Industrial Society* (London: Wildwood House, 1974).

[6] Ross, *Fast Cars, Clean Bodies*, p. 190 ff.

[7] The French edition appeared in 1968: Herbert Marcuse, *L'homme unidimensionnel* (Paris: Minuit, 1968).

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as the "managerial revolution," images of "the lonely crowd," Whyte's "organization man," and Wilson's figure of the "man in the gray flannel suit" were in France, as elsewhere, the popularly-recognized symptoms of the period.[8] Likewise, the universal causes were the statistical diminishing of agriculture and heavy industry, and the rise of administration-related tasks—sales, management, etc..

Also common to most contexts was the sentiment that the people engaged in tertiary activities—the salesmen, executives, and organization men—constituted a new social class that grew out of the automation of industry and the growth of the world economy. Neither bourgeois nor working class, this new social group was seen by turns as either threatening the traditional position of the former, or usurping the meager benefits of the latter. Burnham, for instance, predicted the total disappearance of the bourgeoisie, and a fundamental shift in class dynamics as a result of the "struggle for power" that would emerge from the conflicts between the new owners of the means of production (the government) and those who controlled those means (the managers).[9] Henri Lefebvre went so far as to proclaim that they represented a new evolutionary stage (albeit a step backward) in human development—*cybernanthropes* were the new men who embodied the cold logic of organization.[10]

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[8] See James Burnham, *The Managerial Revolution* (New York: John Day, 1941); David Riesman in collaboration with Reuel Denney and Nathan Glazer, *The lonely crowd; a study of the changing American character* (New Haven: Yale UP, 1950); William H. Whyte, Jr., *The Organization Man* (New York: Simon and Schuster, 1956); Sloane Wilson, *The Man in the Gray Flannel Suit* (New York: Simon and Schuster, 1955).

[9] Burnham, *Managerial Revolution*, 152-171.

[10] Henri Lefebvre, *Vers le cybernanthrope* (Paris: Denoël, 1971).

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In the French context, though, the social significance of organization men, or *cadres* was somewhat different than in other contexts. Like so many other terms and categories integral to modernization in the sixties in France, the term *cadre* had its origin in the workers movements of 1936.[11] It was in attempting to organize societies of engineers in the mode of a workers union, even while avoiding the socialist connotations of the latter, that the *cadre* was defined in a third category, a "third way," neither capitalistic owner nor proletariat laborer.[12] It should be noted that this "third way" is directly related to the French attempt to define a path for themselves through modernity that was somehow *between* the Cold War polarities of American capitalism and Soviet communism, or was, in other words, "neither Ford nor Lenin."[13]

The *cadre* was indeed a paradoxical character—usually educated in the engineering sciences, his actual duties could include technical development of products, research, sales, administration, etc.. Generally, *cadres* were well paid, and hence full participants in the developing society of consumerism in postwar France. Thus, within the traditional descriptions of the classes, they tended to be characterized as seeking entrée into the cultural world of the bourgeoisie and cultivating a "classical taste," but at the same time their streamlined activities and insistence upon logical methodologies lent them an air of the "quasi-futuristic."[14]

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[11] Luc Boltanski, *Les cadres: la formation d'un groupe social* (Paris: Minuit, 1982), trans. Arthur Goldhammer, *The Making of a Class: Cadres in French Society* (Cambridge: Cambridge UP, 1987), 38-49.

[12] Boltanski, *Making of a Class*, 49-54.

[13] Ross, *Fast Cars, Clean Bodies*, 127. This idea is discussed in greater detail relative to the French discourse on leisure in Chapter 4 below.

[14] This characterization is taken from Jean Dubois, *Les cadres dans la société de consommation* (Paris: Cerf, 1969), 101.

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By May 1968, this was a more or less deadly combination of qualities, and the *cadre* had come to be seen as a fairly vile creature—a capitalistic parasite and government technocrat—organizing, computing, compiling, but never producing any real, substantive object. If the fundamental critique of the post-industrial society was that it lacked substance, and within it, every aspect of life had been quantified and Taylorized, the *cadres* were the chief human symptom (and cause). But, according to the mounting critique of the post-industrial society, if one were to look closer, the defining elements of the activities of the *cadres* had also come to characterize the everyday life of Gaullist society as a whole. As Touraine maintained, though the term "alienation" belonged to an earlier industrial era, it remained the best choice to express the post-industrial "consciousness of social contradictions."[15]

Touraine was of course not alone in perceiving the trickling-down of industrial methods and concerns into society as a whole. What he described as "dependent participation," Lefebvre characterized as "controlled consumption," and so forth. Despite their differences, these emerging theories all equated technocracy with the new consumer or spectacle society. Just as workers had once been alienated by their fragmented work along the assembly line, housewives were now alienated as they did their daily shopping, etc.. This was the foundation of Lefebvre's interest in the quotidian—that the machinations (and thus contradictions) of ideology could be perceived in all realms of life, including the seemingly most unremarkable.

Godard's detergent boxes give us some hint as to how these emerging theories were to engage architecture and the city. Architecture was more than simply one

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[15] Touraine, *Post-Industrial Society*, 7.

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symptom among others in this regard, it was an encompassing field—a box that contained all the contradictions of post-industrial society, but at the same time a spatial machine that condensed time and produced and reproduced the very logic of capital and exchange. On the other hand, architecture and the city were the potential catalysts for social resistance—a privileged space for the class struggle, and for the construction of a new society. We have already discussed the complexities of the theoretical treatment of architecture, urbanism, and the post-industrial utopia in the work of Lefebvre, and how that related to the Prospective proposals of Spatial Urbanism. This chapter will take a closer look at how these proposals related, not to the Leftist rejection of modern planning, but to the State-sponsored master plans for Paris itself, which engendered such violent reactions towards the end of the sixties.

Like the *cadres*, architects in France at this time were in the paradoxical position of attempting to be resolutely modern, while embracing neither the American nor Communist models of modernity. This balancing act proved too difficult, of course, and the ubiquitous image of the architect-as-technocrat demonstrates that the modern designer in France suffered much the same fate in 1968 as the *cadres*. The utopian designers of the decade were placed in an even more complex position relative to their own goals and the reception of their work than mainstream architects. While their projects from the early to mid-sixties were clearly attempts to parallel and recreate the essential structures of the post-industrial society, some aspects of those projects, like Friedman's emphasis on user-participation, survived into the post-May period.

But for the most part, Spatial Urbanism was undeniably the perfect expression of the tertiary city. In many ways, it formalized and surpassed, on the conceptual and visual

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levels, the very logic of flows and territorial nodes with which the real master plans for the Paris Region were attempting to contend. Spatial Urbanism *did* constitute a critique of State *aménagement* in the sixties, but it was a criticism based upon degrees: current planning was not modern *enough*; it did not fully grasp the significance of societal structures which demanded a radical new approach to the city; it did not comprehend the true reasons for urban dis-equilibrium.

But much more so than their international counterparts, utopian designers in France were profoundly connected to the official culture of architecture and planning. Not only did they suffer much the same fate as the latter after May 1968, but their projects were designed in direct relation to specific local contingencies, and often responded to the State master plans themselves. In a broader sense, the utopian designs of the sixties were, just like the official *schémas* to which they responded, products of the French urban debates of the period. They responded, directly and indirectly to that discourse, which engaged all the key themes of the time: urban migration, new towns, traffic congestion, socio-pathologies in the urban population, historical monuments, and the global economy. Below, I will describe this discourse, the master plans for Paris that were developed simultaneously, and utopian designs for the region that clearly responded to these issues. My goal is not to prove that these connections existed (that much is obvious), it is rather to demonstrate the complexity of the context and how utopian design was caught between the various ideological poles that defined the sixties in France. It should also be noted here that my approach represents the first attempt to periodize the

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visionary proposals of Spatial Urbanism relative to actual architectural and urban practices at the time (and to the critique of post-industrial society more generally).[16]

Paris, Constructed

One of the best examples of the difficulties of avant-gardism in this context is an architectural guidebook compiled and written by Ionel Schein: *Paris construit: guide de l'architecture contemporaine*, the first edition of which was published in 1961, followed by a second, expanded edition in 1970 [fig. 3.2].[17] The small, square, orange guide is filled with grainy snapshots and terse textual descriptions, arranged by arrondissement, of buildings constructed in and around Paris between approximately 1950 and 1970. Most of the projects surveyed in *Paris construit*—massive housing estates, government administration buildings, and new commercial and industrial projects—were precisely those that had come to be vilified in the popular press and theoretical critiques mentioned above.[18]

If the first edition of Schein's guidebook reflected his faith in the socially transformative potential of modern methods in design, the second edition displays a

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[16] Joseph Abram connects the official plans for *aménagement* the what he calls the "radical" utopian projects of the sixties, but he describes the relation as merely antagonistic: *Du chaos à la croissance*, 282. By invoking Ragon's meetings with Delouvrier and his sincere desire to see the projects of Spatial Urbanism realized, I have shifted the terms of this description to a greater emphasis on the similarities that existed between professional practice and visionary design.

[17] Ionel Schein, *Paris construit: guide de l'architecture contemporaine*, Paris: Vincent, Fréal, 1961, 2nd ed., 1970. Unless otherwise noted, citations are taken from the second edition. The text is presented in French, German, and English; passages quoted use the English translation provided in the text as much as possible, with changes indicated as necessary.

[18] As such, *Paris construit* is still helpful today, as it treats projects in the region that have been systematically suppressed from contemporary guides, such as Hervé Martin's *Guide to Modern Architecture in Paris* (Paris: editions Alternatives, 2001).

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marked shift to a defensive position. It would have been difficult, after all, to maintain an optimistic outlook when writing the entry for the *Maine-Montparnasse Ensemble* and Schein makes no attempt to do so:

> The juxtaposition of constructed volumes is determined only by profitability. Architecture appears here as the product and sustenance of finance. Certain efforts by the patrons do not redeem the whole, which remains, because of its negative aspects, an operative expression of the evolution of the Parisian urban fabric in the sixties.[19]

Maine-Montparnasse marked a significant symbolic stage, like the housing development of *Sarcelles* being constructed simultaneously, in the evolution of public and professional opinion regarding large-scale public works executed under the banner of international modernism [Fig. 1.54].[20] *Maine-Montparnasse* was actually an ensemble of four massive buildings, comprising offices and apartments, three of which (completed in 1964) formed a horseshoe-shaped slab serving as the reception complex of the Metro and train station beneath.[21] The fourth and most controversial building was the *Tour Montparnasse*, completed in 1973. With its monotonous, standardized surfaces, and essentially Beaux-arts siting, the ensemble appeared at the time as simply the largest of many expressions of official apathy regarding urban spaces in Paris. For Schein, *Maine-Montparnasse* clearly represented the absolute contamination of what should have been a genuine restructuring of the urban environment by capitalist interests.

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[19] Schein, *Paris construit*: 78, trans. author.

[20] Because it was at the heart of Paris, the *Tour Montparnasse* truly became the symbol of American cultural imperialism, and the cavalier attitude of French officials and private developers alike. Louis Chevallier's *L'assasinat de Paris*, considers it the worst of all the urban "crimes" committed during the period.

[21] According to Joseph Abram, the complex was one of the largest and most ambitious *grands traveaux* since the Haussmann era; Abram, *L'architecture moderne en France*, 153-4.

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To be sure, virtually every public project was condemned to compromise once it entered the convoluted, nepotistic, and largely corrupt French administrative system. The systems of administration overseeing architectural and urban development in the 60s were those that had their origins in post-war reconstruction, the main body of which was the Ministère de la Reconstruction et de l'Urbanisme (MRU), and related bureaucratic entities (see Chapter 1). Although there are historical studies of this period, and the activities of these ministries, the most helpful sources are often the anecdotal accounts given by architects working within or seeking construction approval from them.[22]

Schein was born in Romania in 1927 and relocated to Paris in 1948, where he attended the ENSBA and was a student of George Henri Pingusson, who likely inspired Schein's interest in architect/artist collaboration. Within several years of his arrival in Paris, he became a contributor to *L'architecture d'aujourd'hui*. From 1950 to 1955 he worked in collaboration with Claude Parent, and also conducted collaborative research with the sculptor Marino di Teana at this time (Parent himself was doing similar sculpture-to-architecture studies with the abstract sculptor Gérard Mannoni during the same period). Schein's most famous project was the first ever prototype house made entirely of plastics (1955-1956, in collaboration with Yves Magnan and Réne-André

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[22] On the reconstruction, I have relied upon Abram, *L'architecture moderne en France*, 11-56, and Bruno Vayssiére, *Le ministère de la reconstruction et de l'urbanisme 1944-1954: une politique de logement* (Paris: IFA/Plan Construction Architecture, 1996); For biographical and anecdotal material see: Fernand Pouillon, *Memoires d'un architecte* (Paris: Éditions du Seuil, 1968). This text was Pouillon's mud-slinging tell-all written from exile in North Africa, where he fled after his arrest and conviction for embezzlement related to a large building commission in Paris. Pouillon's story came to be emblematic of private and government corruption in the realm of large-scale construction. See also: Pierre Dufeau, *Un architecte qui voulait être architect* (Paris: Londreys, 1989); Jean-Yves Andrieux and Frédéric Seitz, eds., *Pratiques architecturales et enjeux politiques: France 1945-1995* (Paris: Picard, 1998).

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Coulon)[23], a project contemporary with Alison and Peter Smithson's plastic *House of the Future* (1956). Schein would remain intrigued by the possibilities of prefabrication and industrial building techniques. During the sixties, Schein was a successful architect in his own right, completing private and public commissions, such as the HLM featured in *Paris construit*, located in Boussy-Saint-Antoine (1967), for which he praises the siting of the buildings, but critiques their lack of surface articulation [fig. 3.3].[24]

The 1971 edition of *Paris construit* was part of a series of three publications entitled "*Collection Environnement*" that Schein issued with the pubisher Vincent, Fréal in the late sixties and early seventies. All of the texts (two of which were more pamphlets than books) decried the current state of Paris. Schein saw a city fractured by private interests and State complicity, and architects catering to bottom lines instead of to the public who would have to live with the resulting works. This was the "evolution of the Parisian urban fabric in the sixties" to which Schein referred in his assessment of *Maine-Montparnasse*—an evolution subjected to the artificial forces of the market as opposed to the genuine technological and cultural forces of the period.

Schein's judgments were by no means unique, or even unusual in the late sixties in Paris. A massive chorus of voices was raised against the *grands travaux* by this point, and it would have been possible to find more sophisticated analyses by turning to Lefebvre, Baudrillard, Tonka, et al.. But Schein's case is interesting because he was, so

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[23] The *Maison en Plastique* project was sponsored by *Charbonnages de France* and the *Houillères du Nord* (coal industries), and was exhibited in the *Salon des Arts Ménagers à Paris* in 1956, where it received widespread, and enthusiastic attention. See: "Breakthrough for Plastics; First All-plastics House is a French Experiment," *House and Home* 9 (April, 1956): 216-7. "L'emploi des matieres plastiques dans la construction," *L'architecture d'aujourd'hui* 28 (September, 1957): xix.

[24] Schein, *Paris construit*, 274-5.

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to speak, straddling a very important fence—both denouncing current planning projects, but defending modernist planning methods and even utopian planning in a more general sense. It is clear, in fact, that Schein's views in the late sixties and early seventies were influenced by Lefebvre, for instance.[25] But Schein's adaptation of what he described as Lefebvre's "well-defined ideological engagement" translated into an eccentric stance that called for, among other things, a "de-functionalized" and "polyvalent" urban fabric, but simultaneously required a massive government agency to oversee the aesthetic qualities of new projects—an office he called the "commission of integrated spaces" or "commission of polyvalent spaces."[26]

Though Schein's prescriptions were unique, his diagnoses were shared by many. He managed to elucidate the key problem of the city as seen by many architects and critics during the period: the conflict between private interests and true planning, or an integrated, coherent, totalizing, modernist urbanism. Capitalism had translated into urban anarchy—space was divided haphazardly, according to economic convenience, and was developed in the same apathetic manner. The results were congestion and banality in the built environment. Large public projects suffered the same fate because the government ceded its control to developers and/or did not understand architecture and urbanism properly. The default position (with variations, of course) for architects and planners came to include the following: the public ownership of land, the elimination of the administrative complexity and nepotism that substituted politics for good design, and a more coherent, unified approach to urbanization.

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[25] Schein. *Pour Paris: anatomie d'une jungle*, n.p.

[26] Schein. *Pour Paris: anatomie d'une jungle*, n.p.

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But architects were becoming more and more isolated in their ability to perceive the differences between "good" urban projects and "bad" ones. Increasingly, capitalism, government complicity, and modern architecture were being grouped together as one and the same entity by critics, the press, and the public at large. Even the profession was divided, and accordingly, the very conception of what modern architecture and planning were was called into question. The "visionaries" accused the builders of nearsightedness and a lack of, well, vision, while the established architects defended their position by claiming (rightfully) that the utopists did not have an understanding of real-world contingencies and compromises; in the meantime, the Marxist critics accused them all (again, rightfully) of complicity with market forces and the technocratic impulses of the government.

One of the best examples of the complexity and difficulty of architectural modernism during this period is the planning and reception of the *Front de Seine* complex (1963-78, Raymond Lopez with Henry Pottier and Michel Proux), which is a large development including commercial and residential enterprises that is located in the 15th arrondissement, on the left bank, between the Mirabeau and Bir Hakeim bridges [Figs. 3.4., 3.5, 3.6, 3.7]. Schein chose in *Paris construit* to criticize the project by historicizing it, much in the manner of his assessment of *Maine-Montparnasse*: "The 'Front de Seine' complex, a few buildings of which are being built, will, like the one of La Défense, illustrate with a delay, the urbanistic concept of the sixties."[27] This sixties

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[27] Schein, *Paris construit*: 84. With the exception of the *Caisse Centrale*, Schein is mainly critical of Lopez's work. He goes so far as to sarcastically describe Lopez's ensemble at La Croix Blanche (1966), as a juxtaposition of "choice morsels" of architecture (*un grand nombre de morceaux de bravoure architecturale*), *Paris construit*, 282, which was Lopez's own

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"urbanistic concept" to which Schein referred was the Spatialist vertical layering of traffic circulation evident in the project, but it was also the exploitation of urban space by economics and limited planning methods.

But, it would have been a mistake to totally dismiss the *Front de Seine* development and its head architect, Raymond Lopez (1904 – 1966), as mere symptoms of an unfortunate recent past. Both the architect and his work (built and written) demonstrate the complexity of the period, rather than presenting a clear example of its shortcomings. In addition to the *Front de Seine*, Lopez was on the *Maine-Montparnasse* team, and designed many other projects in the Paris region, including individual buildings and urban schemes. He conducted a ground-breaking study of circulation in Paris in the late fifties, part of which was a proposed beltway that built upon Bernard Lafay's proposal for a radial expressway of 1954, and foreshadowed the actual *péripherique*, begun in the early 1960s, and completed in 1973. By the early 1960s, Lopez had become the unofficial architect of the renovation of the 15th arrondissement. Northwest of the *Montparnasse* development, stood his *Caisse Centrale d'Allocations familiales* (1959, in collaboration with Marcel Reby), a building highly praised for its innovative use of polyester cladding, light steel structure, and employment of pilotis in order to free ground space for circulation [Fig. 1.47].

Just beyond this site to the west is the massive *Front de Seine*.[28] Although the buildings in this sector were developed over a period of more than 15 years—and in very different styles—from the initial design in the early 60s, most still adhere to the original

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phrase from the polemical introduction to his book *L'avenir des villes* (Paris: Robert Laffont, 1964), 5.

[28] The best discussion of this project is by Abrams, *L'architecture moderne*, 154-7.

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tenets of the urban scheme devised by the Lopez team. The founding principle of that scheme was the segregation of pedestrian and automobile traffic, accompanied by the use of tall buildings (most of which would utilize a very narrow base that widens several stories up) to free ground space. Ragon would claim that this project was the only existing example of Spatial urbanism in Paris,[29] although this was stretching the definition somewhat, as many projects, including *La Défense*, implemented raised walkways, etc., and these devices could not be claimed solely by Spatial Urbanism.

Be that as it may, there is some evidence that Lopez was not only sympathetic to Ragon's visionaries, but indeed saw some inherent similarities between his realized projects and their utopianism. In 1964, Lopez published *L'avenir des villes* in Ragon's "Construire le Monde" series of texts [fig. 3.8]. Lopez's book was far less propagandistic than Ragon's approach, however. It comprised many aspects: a diatribe against the administration's building policies, a history of urban development, a theory of modern architecture, and predictions about future developments. The latter included a fairly half-hearted support for the projects of Maymont and Friedman, which Lopez seemed to regard with a mixture of optimism and suspicion.[30] But the other aspects of Lopez's study (his last significant text before his untimely death) reveal the common concerns.

Lopez was in some ways an old school architect. He was rational and staunchly Miesian in his aesthetic preferences, and as such considered the trend of parabolic and other alternative forms found in contemporaneous design to be decadent and

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[29] Ragon, *Paris hier, aujourd'hui, demain:...*

[30] Lopez says of these works: "It is certain that these projects are somewhat utopian, but who would have thought 40 years ago that the ideas of the Bauhaus would become reality." *L'avenir des villes*, p.102.

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unnecessary.[31] He shared the view of so many other modernists that the contemporary city had fallen out of sync with cultural development, that it had, in fact, fallen a millennium behind technical and social evolution.[32] What was needed was to re-establish the organic equilibrium that resulted from the absolute equivalence of means and expression in culture and city. With a Bauhaus-inspired nostalgia, Lopez sought a contemporary city in a state of cultural and technical balance analogous to that of cities of antiquity and the middle ages. For Lopez, the industrial revolution and ensuing growth of cities had produced the current state of dis-equilibrium, of an alienated populace, dispersed and unhappy, and the shortcomings of Parisian planning.

For Lopez, the new society was based upon organization: "When all is said and done, the anarchic, fragmentary, and isolated character of our [architectural and urban] studies remains surprising in a century in which organization is master."[33] Therefore, the future city required nothing less than a "revision of old notions of time and space."[34] New means of travel, new building technologies, and new cultural norms demanded an overhaul of architecture's most fundamental tenets. This was one of modernism's leitmotifs, obviously, one made most famous by Giedion's definition of space/time, but it is significant insofar as the principle of organization took precedence over any technological or aesthetic imperative. What Lopez and the Spatial Urbanists had in common was the recognition that there was a need for new organizational

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[31] *Où vivrons-nous demain?*, 72-74.

[32] Lopez, *L'avenir des villes*, 81.

[33] Lopez, *L'avenir des villes*, 8????

[34] Lopez, *L'avenir des villes*, 86.

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principles—principles that, though based upon technology and traditional notions of "style," could also transcend these things. This explains their emphasis on the intangible, but nonetheless constitutive elements of time and space. Lopez best articulated his position in his description of Chandigarh, in which "space becomes a reality that one utilizes and for which one finds a form; it becomes a structural element."[35] Accordingly, Lopez's text goes on to develop the notion of the "three-dimensional city," which was in essence identical to the Spatial ideas of GIAP, but also of more moderate commentators such as Persitz, and which can ultimately be traced to Le Corbusier.

Front de Seine is now widely considered a scar on the face of Paris (though it is now used as backdrop for fashion photo-shoots, etc.). To be sure, none of its individual buildings are masterpieces of architecture and most are simply essays in the structural qualities of concrete and steel and the surface effects possible with the use of industrialized cladding. But, like *La Défense* the development stands as a testament to the sixties—to the devotion of architects to maintain urban concentrations within Paris proper during a time of radical decentralization. For this generation of both practicing architects and utopians alike, the answer was a more complex, layered, urban fabric. Today, this literal layering seems facile, and the concrete footbridges and sterile plazas littered with tawdry abstract sculptures lying before uninspired towers seem utterly contrived.

But even in its under-utilized present state, the *Front* admirably demonstrates the benefits of segregated pedestrian circulation, and the ways in which a new complex could be linked to the existing quarters surrounding it. However, the real import of this type of

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[35] Lopez, *L'avenir des villes*, 92.

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urban fabric or mesh was much larger than its isolated tectonic qualities. It involved the linking of this fabric to a larger territorial space, and the coalescence of all forms of circulation: physical, telephonic, commercial, etc. The goal was nothing less than the effective concerting of myriad movements that were brought about by the post-war urban explosion. Everyone with any interest whatsoever in the built environment in France recognized the need for this new form of urban management and development, or *aménagement*, from the Spatial Urbanists to the government itself.

The Urban Phenomenon

> Paris is the seat of traditions. What are these traditions? The traditions are the unceasing addition of new propositions, the uninterrupted progression of successive pages, of pages turned. A page read, a page turned, filled with a now-depleted energy; one has a new idea in the gut and in the head, a frank and clear solution, more efficacious, more in accord, more beautiful and harmonized with the new time that is dawning. Each time there is a burial, a liquidation, and in its place, a creation. Thus, Paris was made of replacements.
>
> Le Corbusier, 1941[36]

In May of 1962, the recently appointed Delegate to the Parisian Region, Paul Delouvrier, sent out a form letter to several prominent cultural figures in France, to ask for their thoughts on the "future of Paris." The letter read: "Much work—housing, urban services—is being undertaken in the Parisian region. Everyday, this work engages the future." Furthermore, according to Delouvrier: "[This work] is not only the affair of individual studies carried out by specialists. There must also be a 'prospective' view of the Parisian region as an ensemble, which makes an appeal to the spirit of synthesis and

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[36] Le Corbusier, *Destin de Paris* (Paris, F. Sorlot, 1941), 11.

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imagination."[37] One of the cultural figures who received this letter, asking for counsel on the future of Paris, was the art and architectural critic Michel Ragon. It seems likely that Delouvrier sent his letter to Ragon because of the latter's 1962 series of articles in the weekly journal *Arts* on the urban fate of Paris (see below). Ragon's articles had been a kind of diagnosis and prognosis of Parisian urban ills. He surveyed official master plans as well as modernist "utopian" solutions, which he strongly favored.

Delouvrier's letter initiated what seems to be several years of periodic meetings between the two men. Ragon describes these meetings as "consultations," but it is not clear what the results were. It is clear, however, that the administration in Paris wanted at the very least to keep its finger on the pulse of the avant-garde in preparing what would become the city's most controversial master plan since the Hausmann era. Delouvrier's infamous plan, the *Schéma directeur d'aménagement et d'urbanisme de la région de Paris*, was prepared during the time he met with Ragon, and presented to the public in 1965 (the year Ragon formed the GIAP).[38] Delouvrier's master plan was never fully carried out, but its publication proved to be a lightning rod for public debate in the sixties. As it happens, what Delouvrier considered visionary or Prospective was seen quite differently by the public. The *Schéma* came to be viewed by both the left and the right as a symbol of all that was wrong with France's postwar leap into technological modernity. Most critics saw it as a symptom of Gaullist technocracy in action, and an indication that the administration was willing to cede the authentic cultural existence of Paris to the

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[37] Letter from Delouvrier to Ragon, May 31, 1962, MRAGO.XR003/1. In a letter from the following year, Ragon wrote to Delouvrier, following up on a meeting they had had, in order to remind him of the names of Paul Maymont and Yona Friedman: Letter from Ragon to Delouvrier, March 3, 1963, MRAGO.XR003/13.

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technical and commercial advent of the automobile, and the historical force of American cultural imperialism.

Delouvrier's *Schéma* might have been the last straw for critics, but it was hardly the beginning of the modern rearrangement of the Parisian region. It was, however, the first proposal to really address the most pressing problems of the post-war period—namely population increase, suburban expansion, and the growing presence of the automobile. In retrospect, Delouvrier's plan and its immediate predecessors can be interpreted as so many attempts to balance circulation with topographical, administrative, and demographic conditions. Thus, it is not uncommon to find, in the countless pages of the postwar French urban discourse, the old familiar body metaphors so beloved throughout the history of modernism: circulation, congestion, suffocation, aneurysm. Paris was sick. Its streets were clogged, its housing over-encumbered and unsanitary, and the situation was only getting worse. Of course, the demand for increased circulation had been tantamount in reconsiderations of the Parisian urban fabric since the Haussmann era (we also see here the continuation of the widespread use of biological metaphors in this sense).[39] But, in the 1950s and 1960s, unforeseen dimensions were added to this phenomenon. Chief among these were the economic boom and the resulting mass migration to urban centers and their suburban agglomerations, and the rapid increase in private automobile ownership (by 1965, there were over 2 million cars in the Paris region).

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[38] *Schéma directeur d'aménagement et d'urbanisme de la région de Paris* (Paris: Premier Ministre, 1966).

[39] See Norma Evenson, *Paris: A Century of Change, 1878-1978* (New Haven and London: Yale UP, 1979), 15-75.

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By the mid-1960s, modern planning in France was a widespread phenomenon. Postwar reconstruction had relied upon the rational and efficient forms and methods of the Athens Charter to quickly restore the human environment. In the decades following the liberation, over half the population of France was re-housed. A significant percentage of these people had moved to larger urban areas to seek economic opportunities. Subsequently, the same economic forces (higher rents that accompany economic growth, etc.) pushed many away from the center, into the *banlieues*, and inevitably into newly-built urban developments and *grands ensembles*. Between 1945 and 1965, the population in the "Parisian Region" had increased by 2 million. However, the population within Paris proper, the 20 arrondissements newly encircled by the *péripherique*, actually dropped during this same period by about 100,000 inhabitants.[40] To house the expanding peripheral population, over 1 million new lodgings were constructed, most often in the form of large groups of mass housing blocks with regulated rents known as HLMs (*Habitation loyer moderée*).[41] These "dormitory cities" (so-called because commuters working in the center of Paris effectively spent only their evenings and weekends at home) and "ghettos," so-called because of their obvious segregatory function, were quickly condemned by professionals, intellectuals, and the popular press alike.[42]

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[40] Pierre Lavedan, *Histoire de l'urbanisme à Paris* (Paris: Association pour la publication d'une histoire de Paris, 1975); edition cited: (Paris, Hachette, 1993), 525.

[41] A 1928 law established the publicly-subsidized housing category of HLM, or rent-controlled housing, so-called after the departments that commissioned them: *Office Public d'Habitations à Loyer Modérée de la Ville de Paris*, or *de la Département de la Seine* (OPHLMVP, OPHLMDS).

[42] See Henri Lefebvre, "Les nouveaux ensembles urbains." *Revue française de sociologie* 1, no. 2 (April-June, 1960): 186-201. One of the most famous critiques of the *grands ensembles* was written by the former mayor of Sarcelles: Henry Canacos, *Sarcelle ou le béton apprivoisé* (Paris: Éditions Sociales, 1979); also, an account from one of the great architects of

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Planning initiatives in the late 1950s and early 1960s were largely attempts to deal with the regional havoc wreaked by the sheer quantity of new developments during reconstruction. In other words, buildings, cities, and people seemed to have been arbitrarily scattered across the landscape, and their only cohering force was the gravitational pull of Paris. The response was a series of official master plans that attempted to restructure—both physically and administratively—the boundaries of the city, and the course of its future growth. The logic of these plans and their various modifications was, at the most fundamental level, the re-conceptualization of the relationship between Paris proper and its suburbs or larger region.[43] The two major master plans for the region of the 1960s attempted to deal with this chaos in complementary ways. According to Lavedan, 1960 marked a turning point in the planning of Paris, because it was then that he urban phenomenon was widely perceived as an urban crisis.[44]

The first response to the crisis was a new schema submitted to the government by the *Service de l'aménagement de la région parisienne* (SARP) that was officially adopted in 1960. This scheme, called the PADOG (*Plan d'aménagement et d'organisation générale de la région parisienne*), maintained the three administrative bodies established by the Prost Plan of 1932,[45] but established a cruciform definition of the region, based upon four exterior urban nodes or centers: La Défense (West), Villacoublay (South), Le

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HLMs during this time, Jean Dubuisson, "Ces ensembles qu'on voulait grands," *Les Années 50* (Paris: Centre Georges Pompidou, 1988), 530-535.

[43] Ibid.: 523. A major reference for the definition of the Region was Pierre George and Pierre Randet, *La région parisienne* (Paris, PUF, 1964).

[44] Lavedan, *Histoire*, 525.

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Bourget (North), and the new town of Créteil (East). Beyond these, a larger network of "satellite cities" was established. The historical significance of the PADOG is that it rejected, for the first time, the radial definition of Paris that had been based upon the old fortifying walls protecting the city,[46] and furthermore that it established a program of decentralization, and new development for administration, financial concerns (*La Défense*), and new residential sectors outside of Paris proper.

As Evenson points out, the PADOG reflected the decentralist impulse, spearheaded by Jean-François Gravier, to limit Parisian growth, in favor of a larger scale of regional and national development.[47] But the tide quickly turned away from the ideals of decentralization, towards the acceptance of an ever-expanding Parisian center. The other major master plan of the 1960s was the Delegate General of the Parisian Region, Paul Delouvrier's *Schéma directeur*, developed between 1962 and 1965, but not voted into law until 1971 [Figs. 3.9, 3.10, 3.11, 3.12, 3.13]. According to this new plan: "Paris and its future must respond to three imperatives: to put to the best use a space that is very dense, old and small in extent; to respect the complexity of the functions and structures indispensable to the equilibrium of a great metropolis; to maintain the equilibrium between its territory and that of its region and, equally, the ensemble to the national territory."[48] This *Schéma* also rejected the traditional radial demarcation of the city, but eliminated the independent nodes of the PADOG, opting instead for two truly massive

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[45] *Départements de la Seine, Seine-et-Oise,* and *Seine-et-Marne*

[46] Lavedan, *Histoire*, 526.

[47] Evenson, *Paris, A Century of Change*, 336-340. See also, Jean-François Gravier, *Paris et le desert français* (Paris: Flammarion, 1947; edition cited, 1958).

[48] *Schéma Directeur*, 11; quoted in and translated by Evenson, *Paris*, 283.

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axes, running parallel to one another on the North and South sides of Paris. Within these axes, a significant number of *villes nouvelles* were to be built (Cergy-Pontoise was the first, begun in 1969) to absorb the burgeoning population and to accommodate a decentralization of industry.[49] This plan, unlike those that came before it, represented the State's commitment to Parisian growth on a large scale and its willingness to substantially expand the urbanized region.[50] Also, its scale and scope were like nothing that had come before, prompting some critics to describe it as utopian.[51] Thus, critiques came from the Left and Right.[52] Hardly utopian, the Delouvrier scheme was nonetheless far-sighted, planning for a Paris of 14 million inhabitants by the year 2000.

Where the PADOG had attempted to use regional cities to absorb the pressure placed upon Paris, by establishing them as independent of it, the *schéma directeur*, on the other hand, annexed satellite cities into the Parisian region, augmenting and integrating everything in the region into the same urban infrastructure. Not surprisingly, the role of circulation was absolutely vital to this integration. Delouvrier planned for 200 km of new metro and commuter train lines (the RER had already been initiated in 1960), and 900 km of roadways, the central sections of which were to form a "*quadrillage de l'automobile*"—a cardinally-oriented circulation grid, superimposed onto the city, connecting the center and region. The purpose of this vast new circulation system,

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[49] Tafuri and Dal Co, *Modern Architecture*: 290.

[50] Evenson, *Paris*, 340-341.

[51] Michel Ragon, *Les Erreurs Monumentales* (Paris:Hachette, 1971), 226. Of course, Ragon's main critique is that the *Schéma* is not prospective enough. Interestingly, Abrams also uses the Delouvrier plan as a transition to his discussion of Spatial Urbanism, Abrams: 282.

[52] Lavedan, *Histoire*, 531.

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integrated into Paris proper, and branching out across and through the axes of the *schéma directeur*, was to bring the region into a state of equipoise, in which any location was equally within reach of the center. This would be possible, despite large discrepancies in actual distances, because of high speed transport. The resulting network would have been one in which everything was maintained in a constant, steady stream of movement. Just as Louis Armand had called for more supple administrative "orientations" to replace the atrophied regulations of the past (see Chapter 2), so Delouvrier had delivered a master plan based not upon the establishment of fixed boundaries, and segregation of urban functions, but an active network in constant motion, able to respond to various future developments (thus, the designation, "*directeur*," as opposed to the PADOG's "*plan*"[53]).[54]

Though critics would soon characterize the *schéma directeur* as one of the most blatant symptoms of Gaullist technocracy, its acceptance was never smooth, and there was much dissent at every level. This was in part a reflection of the intensity of urban discourse in Paris at this time. Within this context, the fate of the historic capital, and its place in the European and global culture of the future were hotly debated. Every conceivable ideological position was represented, from historical reconstruction, to radical urban transformation à la Le Corbusier, or, for that matter, radical urban transformation à la Situationist "unitary urbanism," etc.. It would be entirely possible to write a book-length study of the political complexity of the urban discourse in France at

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[53] Delouvrier makes this distinction in Roselyn Chenu, *Paul Deolouvrier ou la passion d'agir* (Paris: Seuil, 1994), 228.

[54] Delouvrier and Armand, not surprisingly, were acquainted. See Chenu, *Paul Delouvrier*, 151.

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this moment. Such a study would have to account for the ways in which certain projects and policies were represented as either radical, utopian, or socialist on the one hand, or technocratic and neo-imperialistic on the other (Le Corbusier's work is a case in point). Another key symptom of the confusion was the fact that nearly every commentator could (and did) evoke the words of Jean Giraudoux to support their claims. Giraudoux's satirical lament that "cemeteries have more air than the city, etc.." was invoked countless times. For our purposes here, however, it is adequate to underline that modern architecture and planning had no fixed ideological position or political affiliation during the 1960s, beyond a vaguely progressivist technologism. This is true of mainstream practice as well as avant-garde design, which had, as Tafuri pointed out, abandoned the revolutionary orientation of the inter-war period.

But the critique of post-industrial society or the tertiary era that was evolving in academic circles at this time would soon establish or reveal the *structural* connections or similarities between the society of organization and modern architecture and urbanism. In 1967, Lefebvre called for a "*contre-Schéma directeur.*"[55] By doing so, he was rejecting the idea of Delouvrier's vast territorial network as a technocratic organizational device that, like the new towns that he had begun analyzing around 1960, would serve only to order, quantify, and dictate the lives of inhabitants. Against this conception, of course, Lefebvre demanded a new type of planning that would allow for the dialectical movement of production within the city as *oeuvre* (see Chapter 2). Lefebvre, of course, was not alone in seeing strong ideological links between the society of organization, the society of *consommation*, and its modern arrangement in space. Guy Debord, Jean

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[55] See the discussion section of "L'urbanisme aujourd'hui."

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Baudrillard, Michel Foucault, and Roland Barthes would also contribute important texts to the cultural critique of modern architecture and urbanism at the end of the sixties.

As usual, Spatial Urbanism was stuck in the liminal areas of these developments. Arising as it did out of the context of circa 1960 urban concerns, it defined itself against the urban schemes of the PADOG and later the *schéma directeur*, but never attempted to reject their underlying logic of attaining territorial equilibrium. Like the official plans, the projects of Spatial Urbanism were based upon the very logic of organization and circulation (albeit a much more radical model) that would soon be rejected by post-Marxist critique. For designers like Friedman, Maymont, and Schein, Spatial Urbanism could achieve large-scale urban order via the integration of previously segregated functions and zones, like the industrial and residential, and even, at the largest scale, the old dichotomy of urban and rural spaces.

Ragon's entry into the utopian discourse of the sixties came in the context of a series of articles that appeared in the weekly journal *Arts* (previously *Arts-spectacles*) early in 1962.[56] The appearance of this series of articles, *Arts'* "*dossier du Paris future*," is significant insofar as they situate Ragon's first published statements on Spatial Urbanism in the context of a public debate on current urban issues, involving many leading figures in architecture and urbanism at the time, in a journal that can be considered a significant index of contemporaneous cultural concerns.

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[56] There were three main articles: Michel Ragon, "Paris ville musée ou cité du xxe siècle," *Arts*, no. 856 (February 14-20, 1962): 14-15; "3 plans 'satellites'," *Arts*, no. 857 (February 21-27, 1962): 5; "Un plan revolutionnaire: l'urbanisme spatial," *Arts*, no. 858 (February 28-March 5, 1962): 5. Several weeks later, some follow-up articles appeared: Gérald Gassiot-Talabot, "20 architects s'affrontent," *Arts*, no. 869 (May 16-22, 1962): 2; Michel Ragon, "Robert Le Ricolais précurseur de l'urbanisme spatial," *Arts*, no. 871 (May 30-June 5, 1962): 2; Michel Ragon, "Cinq grands de l'architecture font le point," *Arts*, no. 872 (June 6-12, 1962): 9.

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The first article in the series presented current urban proposals by "the greatest architects": Le Corbusier, Michel Holley, Claude Le Coeur, and Serge Menil. Ragon's text also made a critique of the PADOG, and assessed the viability of the so-called "Lopez Plan" (Raymond Lopez's aforementioned traffic study). Ragon favored the Lopez Plan, but pointed out that the planning of future HLMs blocked the proposed circulation system, and thus thwarted it before it had a chance to be accepted.[57] (Two years later, Lopez in turn defended Spatial Urbanism in his own analysis of the future city.[58])

Ragon's analysis of the schemes of Le Corbusier, Menil, Le Coeur, and Holley established his own position relative to the debates. From Le Corbusier's constant re-imagining of the city, Ragon drew the fundamental lesson of "Paris sur Paris," "which is to say that he [Le Corbusier] opposes the retardataire conception of Paris as a museum city, with satellite cities designed to decongest the capital. To suppress the *banlieues* and put nature at the interior of cities is his guiding principle."[59] Thus the *Ville Radieuse*, though some 40 years old at the time, remained the icon of the modernist restructuring of Paris proper.[60]

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[57] Ragon, "Paris ville musée," 14.

[58] Lopez, *L'avenir des villes*.

[59] Ragon, "Paris ville musée," 15. Also included in the article is Serge Menil's scheme based upon expanding *fuseaux* that are essentially zones containing various urban functions (an organic extension of CIAM principles), Michel Holley's plans for preserving a historic "sacred triangle," but then razing the rest of the city to make way for high rises, and Le Coeur's circulatory proposal for "four Champs-Elysées": a massive cruciform roadway extension emanating from the Place de la Concorde.

[60] See Le Corbusier, *Le destin de Paris* (Paris....).

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The next article shifted the discussion from the center to the periphery, with a presentation of "satellite" proposals. The old plans of Prost, etc., were discussed, and the article has a contribution from Jean Balladur (who asserted the ubiquitous theme of urban "equilibrium"[61]) and a response by George Patrix, who was a frequent *Arts* contributor, and GIAP participant. The focus, however, is on three different schemes for decentralization: diffuse sets of *grands ensembles*, Albert Laparade's scheme for several satellite "capitals," and *L'Architecture d'aujourd'hui*'s *Paris Parallèle* (see below). Without rehearsing Ragon's critiques of each, he concludes with an endorsement of the latter.[62] The opportunity to concentrate urban resources in a single location, which would in turn benefit from the designs of France's best architects would, according to Ragon, establish Paris as the future capital of a unified Europe.[63]

The *Arts* articles did not represent the most eloquent or subtle statements regarding Parisian urbanism at the time, but they did manage in a concise journalistic format to present the main ideas of the debate, outline some significant proposals, establish Ragon's *prospective* orientation, and open up future debate in the pages of the weekly. For instance, we find the provocateur Ionel Schein decrying the *L'Architecture d'aujourd'hui*'s project for Paris Parallèle as a megalomaniacal scheme for "intellectual domination," and other major figures such as Albert Laprade responding to the questions

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[61] Jean Balladur, "Devenir," *Arts*, no. 857 (February 21-27, 1962): 5.

[62] Ragon, "3 plans 'satellites," 5. Parenthetically, Ragon's comparison of Menil's "spindle" urban arrangements to linear cities drew a harsh response from Menil that was published in the next article, "Un plan revolutionnaire."

[63] Ragon, "3 plans 'satellites," 5.

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raised by the journal's coverage of Paris urbanism.[64] If these debates, for most of the participants, and certainly for the readers, engendered more confusion than clarity, Ragon seemed to have been one of the few to derive any definitive answers from the inquiries. A year later he would publish *Où vivrons-nous demain?*, and in 1965 found the GIAP.

Paris Parallèle

Before discussing the Spatial schemes for the Paris region, it seems instructive to mention here the "official" modernist response to the urban crisis. As early as 1959, André Bloc and Claude Parent presented their project for "Paris Parallèle" in *L'Architecture d'Aujourd'hui.*[65] In 1960, the project was elaborated and pictured on the cover of an issue devoted to "the urbanism of capitals," which was given to articles about London and other cities, and was obviously inspired by the completion of *Brasilia* [fig. 3.14]. The main concept of *Paris Parallèle* was the construction of an entirely new and independent city 15 to 30 km away from Paris [fig. 3.15]. This development would counter the haphazard construction of *villes nouvelles*, which never reached true urban status because of their physical and cultural reliance upon Paris proper. The parallel Paris would contain all the functions necessary to support a true urban existence, and maintain the historic capital.

Drawing upon the examples of Brasilia and Chandigarh, Bloc asserted that the new parallel capital would be like a projection of the historic capital to a free and

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[64] Gérald Gassiot-Talbot, "20 architectes s'affrontent," *Arts*, no. 869 (May 16-22, 1962): 2.

[65] André Bloc, "Paris Parallèle," *L'Architecture d'Aujourd'hui* no. 88 (February-March, 1960): 5-13.

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liberated space. The two cities would be separated by an untouchable green belt, yet linked by expressways and high-speed rails. Business and governmental interests that desired the centrality and access of Paris, yet were forced to struggle for space in the historic center could freely establish themselves in the new location. Housing and an abundance of cultural activities would round out the urban milieu and establish the parallel Paris as a true urban center, and not a parasitic satellite, chained to the cultural gravity of the Île de la Cité.

Parent's schematic drawings for the project reduce the urban functions to flattened, post-cubist abstractions, signaling both the conceptual nature of the proposal, but also the implicit vision of the new city, which would undoubtedly be constructed in a modern style, incorporating the integration of the arts, as Bloc envisioned it. Though stylistic details were left vague, Bloc described the new center as a "vertical city" that would, in true Corbusian fashion, minimize the occupation of the ground.[66] In order to achieve the optimum architectural composition of the new capital, he continues, a loosening of administrative regulations is necessary in order to achieve the goal: "The structure of the city must be infinitely flexible, to present the multiple expressions available to a modern city, in order to avoid the monotony of the repetition of a single theme."[67]

If the initial sketch of *Paris Parallèle* left much to the imagination, some blanks were filled in two years later in yet another issue devoted to new urban projects.[68] The

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[66] Bloc, "Paris Parallèle," 11.

[67] Bloc, "Paris Parallèle," 11.

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purpose of the issue was clear, and illustrated on the cover: the original Bloc/Parent *Paris Parallèle* was pictured alongside drawings for Chandigarh, Brasilia, Helsinki, Tange's project for Tokyo, and the Candilis, Josic, Woods scheme for Toulouse le Mirail, which had just been accepted [fig. 3.16].[69] In this issue, Michel Bercy, Claude Parent, and Michel Pillet elaborated a more detailed program for the Parallel Paris [fig. 3.17].[70] Located 30 kms west of historic Paris (essentially the same location that Bloc and Parent originally proposed), this scheme anticipated a 100 km^2 plot (approximately 13 km east-west and 8 km north-south) that would be home to 2 million inhabitants. Major circulation routes to the north and south would constrain growth along an east-west axis.

The main physical feature of the city was that it would comprise a true "three-dimensional" built fabric, in which functions—"habitation, work, exchange"[71]—were no longer separated on a vast surface (thus creating sprawl), but combined and superimposed vertically. Offices would occupy the heights of skyscrapers, habitations would be scattered in the median zones, the surface was reserved for limited public automobile circulation (only ambulances, etc., as the city was to be kept free of individual automobiles), various types of mass transit were suspended above the ground, and the entirety of the city was supplied by an underground system for the "distribution of

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[68] *L'Architecture d'Aujourd'hui* 33 (April-May, 1962). Included in this issue are 3 relevant essays: André Bloc, "Crise de croissance des grands cités," Ibid.: 2-3; Paul Herbé, "Faut-il encore faire des villes?" Ibid.: 3; and Walter Backstrom Lowrey, "L'avenir de Paris," 38. The latter is a letter from an American architect bemoaning the haphazard development of Paris, and comparing it to the cowboy urbanism of his own country.

[69] It is interesting to note that Toulouse le Mirail figured prominently in *L'Architecture d'Aujourd'hui*'s defense of the parallel city idea, and the completion of the competition must have seemed an opportune moment to remind their readership of the *Paris Parallèle* scheme.

[70] "Paris Parallèle: proposition pour un urbanisme nouveau," 39-41.

[71] "Paris Parallèle: proposition pour un urbanisme nouveau," 39.

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consumer goods." As if the absence of cars in the city was not optimistic enough, the plan also called for futuristic features such as a "semi-collective" transportation network constituted by a kind of horizontal elevator system in which small capsules could be directed to specific locations in the city with the touch of a button.

If this *Paris Parallèle* scheme seemed more *prospective* than its predecessors, and more removed from contemporaneous debates, the original scheme attached itself explicitly to a critique of the PADOG. Several months after the original statement, a follow-up article elaborated the position of the *L'Architecture d'Aujourd'hui* scheme relative to the fate of the Parisian Region.[72] This article included a more detailed statement of intent by Bloc and five schemes for potential placement of the parallel city in different locations, by different designers.[73] According to *L'Architecture d'Aujourd'hui*, the PADOG simply codified the haphazard growth of the region, sanctioning concentric expansion and the construction of more *grands ensembles*. Not surpisingly, the Parallel plan was rejuvenated in the mid-sixties in response to Delouvrier.

The entire editorial board of the journal (save Raymond Lopez, who dissented) signed the proposal. *L'Architecture d'Aujourd'hui's* circulation was so great during this period that the project was guaranteed a significant amount of publicity. Additionally, With luminaries like Charlotte Perriand, Jean Prouvé, Marcel Lods, Jean Ginsberg, Paul Herbé, and incredibly prolific architects like Jean Dubuisson and Jean Balladur among

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[72] "Paris et sa région," *L'Architecture d'Aujourd'hui*, no. 90 (June-July, 1960), 70-80.

[73] Bloc's and Parent's scheme placed the new city to the West of Paris, between Poissy (to the North) and Trappes (on the south side), Marcel Lods proposal located it south of the capital, just north of Fontainebleau, François Beguin placed it Southwest of Versailles (immediately south of Bloc's proposed location), Jean Chemineau's slightly East of Beguin's,

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others who had "lived the drama of the Parisian Region since the beginning of their careers"[74] signing on, *Paris Parallèle* also carried a significant amount of credibility. These factors guaranteed its status as an unofficial official scheme, and it would figure in most comprehensive accounts of Parisian planning from that point on.

Paris Spatial

> Now imagine not only one Eiffel Tower, but ten, twenty, or even more, rising like a kind of immense metallic forest, linked together by bridges, roads, and platforms. In the interior of this giant "three-dimensional" spider's web are placed dwellings, schools, theaters, stores.... The structure is even lighter and more transparent than that which could have been conceived by Eiffel in 1887. All of the suspension members are cables; those in compression are few, essentially lattice pylons. Scintillating materials, colors, light and diverse forms of the tiniest dimensions are all supported in this "Spatial City."
>
> Alexandre Persitz[75]

The final article in Ragon's *Arts* inquiry was devoted to the work of two young architects who proposed "audacious solutions" to Paris' urban dilemmas [fig. 3.18].[76] The two architects were Yona Friedman and Paul Maymont.[77] Thus the scope of Ragon's series of articles had arced from the past to the future, from the outmoded Prost Plan to the "futurist" propositions of Spatial Urbanism. It had covered the major issues of contemporaneous debates: possibilities for decongestion, the problem of satellite cities,

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and Pierre Vago sites his parallel capital slightly further west, but connects it to Paris via an extension of the grand axis of La Défense.

[74] "Paris et sa région," 76.

[75] Persitz, "architectures fantastiques," 2. This is the author's translation, with one sentence—"All of the suspension members are cables; those in compression are few, essentially lattice pylons."—taken from Banham's translation, *Megastructure*, 57. Ragon also quoted this same passage by Persitz: Ragon, *Où vivrons-nous demain*, 119.

[76] Ragon, "Un plan revolutionnaire," 5.

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the public perception of the *grands ensembles*, the necessity of demolition in the historic center, etc.. The two proposals presented here claimed to be able to solve all of these issues, while maintaining the precious cultural animation of Paris.

The simpler of the two projects was taken from a series of studies by Paul Maymont, done around 1960 for the Paris region. Maymont was an ENSBA graduate, and student of Perret. In 1959 he went to Japan to do research at the University of Kyoto. He returned to Paris in 1961 and joined Yona Friedman's GEAM, with which he shared a fascination for moveable and transformable structures. His association with the group was short-lived, however, but he would go on to be closely associated with Friedman under the auspices of GIAP, and simply because the two were often grouped together in discussions of French utopian designers. Unlike Friedman, though, Maymont soon left the field of Prospective design, and opted for teaching in his own ENSBA atelier in the late sixties until his retirement.

Around 1960, Maymont's main innovation was the idea of the "floating city": a "mushroom" structure that consisted of a massive, hollow, circular concrete base of about 20 meters in diameter, from which rose a central structural core that could reach various heights (always quite tall) [Figs. 1.20, 3.19, 3.20, 3.21,]. Hanging from this core were floors of varying diameter (usually larger at the bottom) that carried the necessary architectural and urban functions—housing, offices, streets, public spaces, etc. These platforms were suspended from the core, but also connected to the top of the structure via suspension cables.

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[77] Ragon recounts meeting Maymont for the first time in his *Arts* office in December, 1961. This was his introduction to Spatial Urbanism; Ragon, *Prospective*, 14.

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Maymont developed the floating idea while doing research on aseismic structures in Japan. He developed the structural details of a concrete foundation, with air-filled cavities in response to tremors, but soon realized the idea could be transferred onto water as well. The initial results were large pyramidal structures resting upon barge-like foundations that floated on water, thus allowing them to be moved, and linked to similar structures at will [fig. 3.22]. This allowed for flexible organization and growth. Maymont considered the idea ideal for coastal urban areas that wished to expand without simply expanding further inland. Thus for Tokyo, Maymont utilized the bay in a project extremely similar to Kenzo Tange's of the same year, and also reminiscent of Kikutake's floating cities (c. 1958).[78]

The pyramidal structures were massive and volumetric. Maymont soon moved from this type of expression, to the lighter, circular version that dominated his proposals for Paris. The necessity of placing these structures on a body of water was soon surpassed by the realization that they could serve equally well as land-locked megastructures that could be built on marshy or poor-quality soil. These island/buildings were conceived as large ensembles, connected by suspended roads and railways. Like other Spatial proposals, Maymont considered the stacking of cities a viable means of maintaining geographic and demographic concentration.

Maymont's first Paris-specific scheme was designed for the Plaine de Montesson, a wetlands area (now a nature preserve of sorts) west of—and within the administrative jurisdiction of—*La Défense* resting in a curve of the Seine [Figs. 3.23, 3.24]. The city suspended over the waterlogged land would have constituted for Maymont a "Venice of

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the 20th Century."[79] In elevation, the giant towers (which could house 15,000-30,000 inhabitants each) with their elegantly sloping sides, evoke the covers of science fiction magazines from the period. Compositionally, they are the most regular, symmetrical and staid of Spatial Urban proposals. They have an undeniable beaux-arts-inspired sense of siting and regularity.

Throughout the sixties Maymont utilized the iconic form of his floating towers to re-imagine Paris [fig. 3.25]. Indeed, it was likely to Maymont and Otto that Persitz referred in the quote cited above that describes a Paris filled with Eiffel Towers. Maymont's projects became more and more ambitious—larger in scope and scale. Following the example of Delouvrier, by the mid 60s, Maymont had clearly begun to think in larger, regional terms. A project from 1965 shows Paris at the center of a vast network of organically conceived "cells"—each comprising a central circular crenellated structure of several stories in height, and surrounded by a ring of towers [Figs. 3.26, 3.27]. The central part of these groupings, or *villes circulaires*, were to be used for housing up to 100,000 inhabitants. The structure formed a protected circle within which parks and public spaces were established. Cars would enter into a parking structure below, and the main levels would be pedestrian only. Maymont termed the surrounding towers "satellites." These agglomerations were linked to one another and central Paris via auto and rail routes forming a vast network of cities on the terrain. The gestalt is one

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[78] According to Maymont, these projects were developed independently: Interview with Maymont, April 4, 2002.

[79] Ragon quoting Maymont in "Un plan revoutionnaire," 5.

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of equidistance and uniform coverage—cells and agglomerations all "speaking" to one another via a giant net-like system.[80]

At the heart of all Maymont's Paris projects was the device that earned him perhaps the most recognition—*Paris sous la Seine* [Figs. 3.28, 3.29]. The *Paris under the Seine* idea consisted of a subterranean 14-lane expressway, parking for half a million cars, as well as public and private spaces in an underground linear circulation route that would link the city center and west highways of the region. Ragon has described the project as a "linear city."[81] The structure would rest 3 to 4 meters under the water (excess water would be channeled through massive pipes to the Plaine de Montesson), and extend down to a depth in the ground of 60 meters. The system would extend between the *Pont Neuf* at the Île de la Cité and the Auteuil viaduct to the west. Ragon relates that the structure would expand its size and functions under certain key locations such as the *Maison de la Radio* and the Place de la Concorde among others.[82] The multi-story development would include public spaces and other services on the banks of the Seine, and a network of underground roads linking the main artery to other quarters in the city.

When the plan did surface, it was not without some ostentation. The East hub at the Pont Neuf called for a re-design of the public spaces between Notre Dame, the Prefecture of Police and the Hôtel Dieu, a footbridge linking the Îles de la Cité and St. Louis, among other changes [fig. 3.30]:

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[80] This project is described in Paul Maymont "Proposition pour Paris," *L'architecture d'auhourd'hui*, 39 (June, 1968), 18-21.

[81] Ragon, *Prospective*, 140.

[82] Ragon, *Prospective*, 140-141.

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> A garden, linked by wide footbridges to terraced quays, occupies the center of the composition. The important archeological discoveries of the Île de la Cité are thus reclaimed.
>
> Visitors leave their cars in large underground parking facilities under the Seine. The garden is accessed from the ground at the rear of the Prefecture of Police. Arcades restore the sense of scale, the façade of the cathedral is reflected in the mirror of water [of a man-made pool], and a great stair [leading up to the entrance of the cathedral] defines a square restored to its ancient proportions. An underground passage submerges all circulation in front of the monument and allows access to the square for pedestrians and official ceremonies only.
>
> A curtain of large trees masks the Hôtel Dieu and the Prefecture of Police, which it would be desirable to replace with a large park.[83]

Part of this re-design of the Notre Dame Place was lowering the entire square to the level of the river, and the addition of a monumental stairway leading to the entrance of the cathedral [fig. 3.31]. The image of the new Île de la Cité was immortalized by a rendering that appeared in the infamous *Paris Match* article from 1963.[84] This image also shows a large, modernist building across the river on the quai de Montebello, suggesting further development of the area [fig. 3.32]. It was arguably this article, devoted largely to his Paris projects, that secured Maymont's fame during the period, more so than his publications in specialized journals.

Paris sous la Seine is important precisely for what it tells us, not only about the state of utopian design, but also about French architectural production and modern planning more generally. In the context of the Paris urban debates it is especially significant insofar as it represents the acknowledgement of the need to radically alter the urban fabric, even while maintaining its historic and picturesque physiognomy—a requirement that was more and more important during the sixties. *Paris sous la Seine* was an invisible utopia—an application of Spatial Urbanism in such a way that it made as

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[83] Maymont, "Proposition pour Paris," 20.

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little impact as possible on the perceptions of inhabitants and visitors of the city. But, perhaps ironically, this project came to represent all the negative aspects of French utopianism during the sixties. It signaled the ultimate concession on the part of designers to traffic circulation, and their willingness to literally undermine the traditional city. The irony continued to accumulate when the Right Bank expressway—an undeniable echo of Maymont's scheme—was in fact completed in 1967, albeit only partially submerged, and much more of an eye sore than any underground structure would likely have been.

Maymont, like many of his contemporaries had clearly recognized that the job of the architect was quickly evolving towards management, and *Paris sous la Seine* was an indication that henceforth, the architect must concern him or herself with things like circulation and communications technology as much as with "form-giving" in the traditional architectural sense. Maymont also addressed what came to be a monkey on the back of the French utopianists—economics. For all of their convincing argumentation regarding technical feasibility, critics could and often would invoke the financial card to reject their projects. For his Paris schemes, Maymont had also devised an economic plan that he felt would easily pay for the vast urban restructuring he foresaw. Maymont proposed a kind of re-allocation of resources form the periphery to the center of Paris by the selling of plots from the Bois des Boulogne and Vincennes to luxury developers and rich individuals, the profits from which could be used for land reclamation and re-urbanization in the center.[85]

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[84] Marc Heimer, "Univers-match," i-xvi. While Maymont provided some illustrations for the piece, some were also done by one Tanguy de Remur, who was presumably a staff illustrator. These images are less schematic than Maymont's own and in a decidedly more popular style.

[85] Maymont, "Proposition pour Paris," 19.

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It is perhaps not surprising that with radical schemes such as these, Maymont's proposals were not only regarded with skepticism at the time, but have historically come to be seen as symptoms of an over-zealous technocratic class of architects. Maymont himself retreated from this type of large-scale design after the events of May '68, which he felt signaled a transformation in society that demanded a more sober, more serious approach to urban design.[86] However, given the projects that were actually adopted by the State (the *péripherique*, and Right Bank expressway for example), Maymont's proposals were not as utopian as his critics have implied. Rather, they seem to be reactions to specific urban conditions (namely congestion, decentralization, and overpopulation) that were very much part of mainstream and avant-garde discourses alike at the time.

Yona Friedman's first projects for Paris date to 1957 and the first specifically Spatial projects were begun in 1959 and elaborated through 1964, and beyond. Though Friedman drew up proposals for several other specific cities at this time, the Paris plans remained his touchstone, and acted as the central applied example of his theories.[87] His first project, a temporary housing complex located in (or over) the Bois de Boulogne, demonstrated his theories of mobility in architecture in a rudimentary form [Fig. 3.33, 3.34]. The project was based upon the insight that the reconstruction of old *quartiers* would require the temporary relocation of residents. Friedman proposed moving them into this new structure. Constructed on a strict grid plan, narrow structures on *pilotis*

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[86] Interview with Maymont, April 5, 2002.

[87] Thus, in 1970 when the expanded edition of *L'architecture mobile* was published, *Paris Spatial* still figures prominently: Friedman, *L'architecture Mobile*, 139-144. Here,

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would hold cell units that could be manipulated at will by the inhabitants. The project's elevation is truly classic megastructure: vertical columns connected by a curtain-like grid, resembling early works by the Metabolists, only more abstracted, and less volumetric.

This initial Paris project set the tone for much of Friedman's and other Spatial Urbanists's proposals. It placed radical structures in existing contexts, based upon real, or at least realistic, building program requirements. It also demonstrated the willingness of the architects to profoundly alter the existing urban fabric; the Bois de Boulogne is one of Paris' most precious green spaces, which would have been irrevocably affected by Friedman's project, even though as little of the ground as possible would have been "disturbed." However, Friedman's Paris projects were designed with preservation as one of their main goals—preservation of the concentration and centrality of the Parisian agglomeration and the preservation of the historic buildings that could remain intact underneath his structures.

This apparent paradox—the willingness to construct positively massive structures, overhanging an area whose "actual character" he nonetheless wanted to maintain—set the tone for all of Friedman's *Spatial Paris* projects. The rudiments of these works remained unchanged throughout the sixties: "[t]he essentials of the project consist in the construction of new quarters *above the existing city* in such a fashion that the new constructions do not entail significant demolition."[88] These new quarters would be characteristic grid structures, containing spaces for all the urban functions.

Friedman dates this elaboration of the project 1961-4, although the first drawings were done earlier.

[88] Yona Friedman, "Paris Spatial," *L'Architecture d'Aujourd'hui* 33 (April-May, 1962): xxxvii.

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By 1962, Friedman's conception and specifications for the spatial infrastructures on *pilotis* were codified into a number of different entities, which were to be used in combination to form the Spatial City. These were "*blocs à l'enjambée*" ("span-over blocks"[89]), which were bridge-like structures with thick *pilotis*, "Spatial Quarters," which were essentially the trihedral grid structures that could be built onto the *blocs*—"[t]he Spatial Quarter consists of a modular three-dimensional grid (which is constructed with trihedrons), containing cells of 25-30 m^2 of useable surface"[90]—and the larger combination of these elements constituted a "Spatial Agglomeration."

The structure (or *quartier*, as Friedman described it—no doubt to evoke scenes of traditional, even historical urban life) is the key element in Friedman's work at this time. This space frame could hold several levels, thus allowing for both vertical and horizontal movement and spaces [Fig. 1.29]. This also provided for the effective vertical superimposition of functions: industrial, habitation, agriculture, cultural activities, etc.. Although suspended over the existing street, the utilization of only a certain percentage of the grid would allow for light and air penetration to the lower levels (Friedman considered the "optimum proportion" of utilized versus unutilized space to be 50% to 60%). Furthermore, according to Friedman, the entire structure could be climatically conditioned—roof structures could form heated and cooled zones that would be protected from the elements. This would facilitate the effective mixing of interior and exterior

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[89] I am here using the translation of the phrase used in *Yona Friedman: Structures Serving the Unpredictable*: p.28.

[90] Ibid. Friedman later expanded this measure to 25 – 36 m^2: Yona Friedman, "Pourquoi l'urbanisme spatiale?" in Ragon, ed., *Les Visionnaires*, 69.

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spaces within the structure. Public spaces could be heated, creating, in effect, giant city-sized rooms.

The structure would hold cells or groups of cells that could host the aforementioned functions—dwelling, business, and industry, etc. Friedman termed these useable cells "containing structures."[91] These would be prefabricated units that could be inserted into the voids of the supporting structure. Many of the models that Friedman produced at this time were attempts to demonstrate the efficacy of placing these containing structures in the infrastructure. But, perhaps more importantly, as Friedman had been describing from the late 1950s, the key feature of this system (cells in an infrastructure) was that it allowed for multiple and changing configurations of its elements. Families could add to or reconfigure their living space as they saw fit. Offices could expand when necessary, and factories could grow or shrink as circumstances demanded. However, it should be noted that for *Paris Spatial* specifically, Friedman does not emphasize the mobility of the proposed structure, but rather the ways in which it meets Paris' most pressing problems, such as population increase and circulation.[92] Though Friedman's theories of mobility, spatiality, and group dynamics all collapsed into one another at various times, he seems more concerned in these initial formulations to meet mainstream Paris-specific problems.

The vertical layering of the city would be able to accommodate an increased population, sustaining about 80,000 inhabitants per km^2, including the existing buildings

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[91] Friedman, *Les Visionnaires*: 64.

[92] For instance, in the *L'Architecture d'Aujourd'hui* article, he states simply that "spatial structures...permit the free exchange or regrouping of elements" without addressing the benefits of auto-design by the inhabitants: "Paris Spatial," xxxvii.

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on the ground, and the stories suspended above. Friedman also had an extensive plan to improve circulation: pedestrians would have the entirety of the ground surface, as well as special walkways in the Spatial Quarters, including vertical and horizontal movement (roadways would thus be suspended, but segregated from aerial pedestrian streets); spatial structures would be built above existing train stations and their tracks, providing not only additional automobile routes within the city, but additional "portes" for circulation in and out of Paris, in the cardinal directions. Outside the city, liaison points between trucks and trains would allow for the exchange of goods that could then be brought into the city via rail (so that delivery trucks would not add to congestion). The final point of Friedman's circulation plan was the movement and delivery of these goods during the middle of the night via the Metro system, when it was not in operation for passenger travel.[93]

But the logistical specifics of *Spatial Paris* are perhaps less interesting than its plan on the ground, and its urban functionality. Over the years, Friedman imagined various locations and configurations of the spatial structure over Paris. It is impossible to piece together an exact chronology for these designs, or in many cases to match plans to their respective elevations, models, etc. Friedman's *Spatial Paris* was a composite image—an idea of what the city could have been, and only rarely a systematically developed project. However, some trends and significant developments can be discerned in the long life of *Spatial Paris*. Initially, the structure was a peripheral one, bordering the outer ring of the 20 arrondissements, in much the same location as the *peripherique* expressway that was to be constructed just a few years later [fig. 3.35]. This plan had the

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[93] Friedman, *Les visionnaires*: 69.

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structure surrounding the city on three sides, leaving the Seine uncovered to the west. The new city remained outside the sacred hexagon, or the "untouchable" arrondissements forming the historic heart of Paris, making only occasional advances toward the center, one example being the "administrative spatial quarter" that extended down from Gare du Nord, and terminated over Les Halles (in the plan presented in 1962). As both Friedman and Ragon indicated, this scheme left the historic center untouched.[94]

However, subsequent drawings showed a closer encroachment, such as the aerial map view published in *Les visionnaires de l'architecture* illustrating a north-south oriented structure emanating from the Gare d'Austerlitz, and extending up towards, and over, the Pré St. Gervais area [fig. 3.36], and another sketch of the project shows a much wider peripheral structure occupying more of the center, due to its girth. This peripheral placement would have the super-city crossing the Seine in two locations, one well outside Paris to the northwest, and the other in the southwest, extending approximately from Billancourt up to the Bir Hakeim bridge (the area of the then new Front de Seine) [fig. 3.37]. One of the most striking and frequently published images of *Paris Spatial* depicts the structure, pilotis rising from the middle of the river, extending over the Seine in this manner [fig. 3.38].

Spatial Paris, according to Friedman, had the appearance of a massive belt, composed of an "open-work" system of "tiles," or of a giant "trellis,"[95] a vision that he embodied with models produced at the time that are literally composed of a cubic wire grid with small, white tiles suspended within [fig. 3.39]. The effect of these models is

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[94] Friedman, *Les visionnaires*: 69; Ragon, "Un plan revolutionnaire," 5.

[95] Friedman, *Les visionnaires*: 69

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totally abstract, and pushes them into the realm of abstract sculpture as much as a schematic study of urban volumes. Indeed, despite Friedman's disavowal of any kind of formalism, it is difficult to dissociate this kind of structure form the abstract sculptural grids being produced as a kind of international diffusion of constructivism by Gabo and Pevsner, et al.—a totally abstracted network of rectilinear form whose inherent, formal, principles of strict order would somehow be absorbed by the urban chaos onto which it was being superimposed. The physiognomic variations that might result from the users' interventions seem to pale in comparison to this overwhelming system, forming a kind of "artificial topography" over the original surface.[96]

It is interesting to speculate on what the impact of the Spatial City would have been from the ground. Friedman's cartoonish drawings tend to "lighten" the structure, making it seem transparent and airy. The montages and some early models and schematics give a better impression of what the visual impact of the structures might have been, had they been built [Figs. 3.40, 3.41, 3.42, 3.43]. An early series of publications in 1960 in *L'architecture d'aujourd'hui* gives the most developed technical details that the project would ever have. These schemes were worked out with the architect Jean Pecquet (Friedman's legal French associate before he was naturalized), and the urbanist Robert Aujame. Here thick concrete columns containing elevators and service spaces for electricity and plumbing support a very rigid grid, hanging quite low over existing buildings. The structure is a space frame composed of trihedral elements, in turn composed of standardized "bar" elements attached to one another using connectors. As a rule, the structures cross over street and building spaces equally.

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[96] Ragon, ed., *Les Visionnaires*: 46.

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This early elaboration shows none of the interior spaces of the structure—only the façade, which lends the entirety of the image a more uniform appearance than later drawings. As Friedman had described many times, the interior of the space frame would vary depending upon the will of the inhabitants. Even in more developed sketches for the interiors of these structures, Friedman imagines fairly undetermined volumes and void spaces juxtaposed in the frame. On occasion, when these volumes and voids are detailed further, one sees fairly minimalist building volumes and open plazas and walkways, often covered with large cloth "umbrellas" [fig. 3.44].

Photomontages give an idea of the view of the structures *in situ* [Figs. 3.45, 3.46, 3.47, 3.48]. These show the spatial structures superimposed onto images of the city, the grid "floating" over more and less recognizable Parisian locales.[97] Over the Seine, or the Champs Elysée, or less famous sites, the Spatial City straddles parks, streets, and buildings. Here, the megastructural impact of the structures is made clear. Despite the rhetoric of transparency, it is clear that the actual ground surface and the space immediately above it are sacrificed in favor of the artificial topography constructed above.

In 1964, the year he also began producing drawings for a *ville spatial* for New York, Friedman produced what may be the most systematically developed scheme for *Spatial Paris*: a project for a structure suspended above Gare St. Lazare, and emanating from it, atop its tracks [Figs. 3.49, 3.50, 3.51, 3.52]. The project was to use the "air

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[97] A note to these images in the recent catalogue *Structures Serving the Unpredictable* maintains that Friedman "made these images to illustrate the scale of *La Ville Spatiale* compared to that of the existing city. He obviously never proposed building such structures above sites like this" (p. 35). This is untrue. In many proposals, Friedman's structures are, as he himself stated

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rights" above the tracks for a spatial structure, and link the station to roadways and the metro within the Spatial Quarter. The existing images for this project show the structure on various axes leading into the station and give an idea of scale and visual impact.

The origins of this project are what interest us here. The proposal was actually commissioned by a semi-public group, like those that often sponsored large building programs such as *Maine Montparnasse*—a *societé d'economie mixte*—(Friedman was recommended by the architect Paul Herbé), and was meant as a direct "provocation" to Paul Delouvrier and his *Schéma.*[98] The Gare St. Lazare project was intended to demonstrate that the *Schéma directeur* needlessly decentralized the urban fabric, relying on far-flung satellite cities and massive circulation infrastructures, while ignoring the utilizable spaces that still existed in Paris proper. Here was the essential crux of Friedman's projects for Paris, and those of Spatial Urbanism more generally—to utilize verticality or three-dimensionality to maintain the city as a coherent, centralized body of activities, organized according to rational, modernist principles.

Paris, Programmed

But if the early drawings and models appeared abstract, Friedman's later treatments of the subject took the grid idea to another level entirely. The text for *Paris Spatial* that Friedman published in 1970 as part of the expanded edition of *L'architecture mobile* figures the city as a "machine" and the structural transformation of the city is described almost exclusively in terms of circulation:

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many times, constructed above existing urban quarters. His many schemes for Paris leave little doubt that historic quarters would have been included in some of these plans.

[98] Interview with Friedman, February 4, 2002.

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> A network is a system of liaisons (routing) between different specific "destinations" [*buts*]. For example, an apartment is only a "destination" of the evening, a workplace a daytime "destination," etc..
>
> [...]the stabilization of the Paris "machine" can be obtained by the following operations:
>
> a1) Transformation of the actual Metro system to a 4-direction planar network with the least possible cost. This transformation can be effected by the distancing of Metro stations (by closing every other station), by changing the direction of Metro lines from the existing system (by utilizing the inter-line connections that exist already) and by the incorporation of the SNCF suburban rail lines (and the circular line) into the urban network.
>
> a2) Transformation of the urban road system into a 4 degree planar system of one-way streets. The meshes of this system will cover the same area as the meshes of the transformed Metro.
>
> b) Trucking and inter-quarter circulation will be served by these transformed systems. The unused Metro stations will function as warehouses for merchandise for each quarter; the merchandise can be moved by two or three Merchandise-Metro-Trains during the night.
>
> c) The technique of Spatial Urbanism (suspended) can create new utilizable spaces in the meshes that are actually too little utilized (sorting stations, warehouse, cemeteries, etc.).
>
> d) The daytime "destinations" (offices, industry, etc.) in the especially congested meshes will be subject to a special tax. This tax will serve to cover the specialized constructions to ameliorate the situation (as described in a1, a2, b, and c), and for roads and supplementary parking.[99]

The grid that Friedman uses to illustrate this *Spatial Paris* is a flat grid with directional arrows, indicating the area/circulation relationship proposed by the transformation of the Metro and roadways [fig. 3.53].

This was not the only instance of Friedman conceiving of a strategic re-utilization of existing infrastructures for a new kind of planification. Indeed, the above scheme seems relatively modest when compared to a much broader plan that he devised for all of France. Because of the lack of concrete information regarding this project, I do not want to dwell on it too much, but in an undated, unpublished manuscript (probably from the mid-sixties) Friedman proposed dividing all of France into a "federal republic" [fig.

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[99] Friedman, *L'architecture mobile*: 139, 142. A translation of the entire section can be found in Appendix....

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3.54].[100] This republic would have comprised semi-autonomous nation-states whose geographical boundaries were established by the existing SNCF rail network. When they reached an adequate size, these regional states could declare their independence from the republic. In this scheme, Paris would play the role of a kind of Washington DC, central yet detached. This rather far-fetched solution to the problems of decentralization reflects Friedman's concern with "critical group size" and the need to keep administrative and urban structures from growing beyond their functional size and concentrations.

This formulation of the city as no more than a complex system of movement represents the evolution of the idea of the Spatial City. Here, the physical structures, or *blocs à l'enjambée*, are mere footnotes, incidental details that represent one way of attaining circulatory equilibrium for a congested Paris. We see devices used by Delouvrier (for example, the *quadrillage de l'automobile*) taken to a geometrical and conceptual extreme. This evolution of Friedman's designs reflects his growing interest in information theory and biology during the mid-sixties. These new interests complemented his theory of architectural mobility, which will be returned to in the following chapter.

The development of Friedman's ideas away from the physical structures of Spatial Urbanism—grids, space frames, suspended walkways, etc.—reflected a more general trend. Many designers were realizing that the true substance of Spatiality was not necessarily to be found in a physical volume, but rather in the overlaying of different modes, styles, or media of circulation, communication, and exchange. Within this trend, space became the privileged arena of the interaction and integration of these various

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[100] Yona Fridman, "Proposition pratique no. 2," MRAGO.xt001/43.

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systems, whose current overload and congestion were causing urban unbalance. For some of these designers, the key problem of Spatial design became the reconciliation of these various "networks"—the physical infrastructure of roads and rail, communications technology, and the production and transport of consumer goods, etc.. Friedman's ultimate goal was to arrive at the simplest possible equation that could accommodate this variety of activity. Other designers in Ragon's circle took slightly different approaches, and inevitably applied their ideas to the urbanism of Paris.

The Hungarian- born sculptor Nicolas Schöffer was also thinking about a Paris in a state of adaptable equilibrium. For him, this ideal state would be maintained through the use of cybernetic programming. Deriving from his own often-eccentric theories of human perception, information theory, and sociology, he, like Friedman and others, wanted to re-integrate the disparate activities of urban humanity into a common dynamic space. Essentially, Schöffer developed his own urban Charter.[101] It had its own "four functions," only now it was the "three tiers:" work, residence, and leisure. He advocated "vertical" planning to improve the population/land use equation, and like everyone else during this period, he insisted on the necessity of the circulatory infrastructure.[102] These pragmatic ideas were then incorporated into Schöffer's own notions of aesthetics, perception, and space-time. We will have occasion to return to this more diverse body of ideas in the final chapter, but here I would like to concentrate on his proposals for Paris.

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[101] Schöffer's urban ideas are developed in many places. I have relied primarily on: Nicolas Schöffer, *La ville cybernétique* (Paris: Tchou, 1969), *La tour lumière cybernétique* (Paris: Denoël, 1973), and *La nouvelle charte de la ville* (Paris: Donoël/Gonthier, 1974).

[102] Schöffer, *La ville cybernétique*, 100-103.

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One of Schöffer's most significant ideas and realizations was the so-called *Tour Lumière Cybernétique*. This structure existed on a number of different levels. It was a sculpture, a robot, and it contained the core of Schöffer's idea of the future city. What began as a fairly unremarkable piece of constructivist-derived kinetic sculpture eventually came to be the artist's manifesto piece. The first Tower was built in the Parc de Saint Cloud in Paris in 1954, with the technical assistance and sponsorship of the Philips electronics company. Moveable, colored metal plates were affixed to a tall metal structure that contained recorded experimental music by the composer Pierre Henry. The cybernetic aspects of this work were developed further in an intereactive sculpture called *Cysp 1* (1956) [Fig. 2.8]. This work, also a geometric structure with moveable parts, incorporated pickup devices—photoelectric cells and microphones—that would determine its movements. Schöffer went on to use these types of pieces in multi-media performances.

A few years later, in 1961, Schöffer realized, at the invitation of the local government, the largest and most developed of his Towers in Liège, Belgium, where it still stands [Fig. 3.55, 3.56, 3.57, 3.58]. This structure was a large-scale implementation of the feedback principles initially developed in *Cysp 1*. Engineers from the electronics company Philips developed its computer system, while the associated Philips Society underwrote the project. The Tower was essentially the centerpiece of an orchestrated spectacle that involved ambient sounds and music, projected lights, and the movement of parts of the sculpture itself. The latter was a brushed metallic grid, rising some ... meters. It was erected in a park, between the Meuse river, and a new, modern *Palais des*

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Congrès, with a massive glass curtain wall. Schöffer chose this location because of the possibilities of reflection from the building on one side, and the water on the other.

Schöffer originally commissioned the avant-garde composer Henri Pousseur to draft the musical score for the Liège tower. This music would be accompanied by various audio tracks projected from speakers on the tower or ambient sounds like traffic and the sounds of birds, etc.. But, as Schöffer recounts, as inauguration day drew near, city officials and the public began to dispute his musical taste. A compromise was reached and it was decided to use the music of Bach and Gershwin. The *Tower's* sounds, which were to continue after the initial performance, were eventually silenced as well. Apparently, the recorded sounds of birds were drawing real birds that attacked and damaged the *Tower's* many electric motors.[103]

Despite the hitches, the *Tower* proved a popular success. Riding this wave, Schöffer immediately began drafting an even more ambitious plan for his own city of Paris that required all the ingenuity and opportunism of a true architect:

> Immediately after the realization of the project for the Liège *Tower*—that allowed me to experiment with a certain number of ideas and to establish what the technical, and moreover, economic imperatives might be to transcend the otherwise insurmountable obstacles [of such a project], I began to think about an urban project in the region to the west of Paris called the *Défense* project, which had begun to appear in the press, and I undertook a detailed study of the region, and its existing master plans.
>
> This study was followed by the creation of a model at 1/100 of the tower that I imagined, situated just beyond the CNIT and within the axis of the "Triumphal Way."
>
> This model figured in my retrospective exhibition at the *Pavillion de Marsan* in 1963, organized under the patronage of André Malraux, to whom I showed the project during the exhibition, along with a 12-minute film.
>
> André Malraux whole-heartedly supported the project, about which he first spoke to Georges Pompidou, then-*président du Conseil*, then, later, to

[103] Schöffer, *La tour lumière cybernétique*, 15-16.

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> General de Gaulle. And thus began the story of the TLC [*Tour Lumière Cybernétique*]; it is a long story that is still far from ended.[104]

Schöffer's *La Défense* project is the most concrete expression of his urban ideas [Figs. 1.8, 3.59, 3.60, 3.61, 3.62]. It also brings together many disparate aspects of the broader context of the time in which it was designed and promoted. Obviously, the *Défense* tower was meant to be the Eiffel Tower of the 20th Century—a new Parisian monument, located in the new business development that was, thanks to the CNIT building, also quickly becoming a cultural center as well. The confluence of Schöffer, the artist/technician/architect/PR rep, the administration, private industry (Philips), and the changing face of the city itself deserves some comment here.

Schöffer's book, *La tour lumière cybernétique* (1973), was more than just a history of the development of an idea. It was also more than a personal statement or manifesto. It was a developed proposal for the project, written with the administration and public in mind. It included, along with Schöffer's aesthetic ideas, detailed site studies, technical drawings, provisions for parking and circulation, and a financial forecast. Who knows how close this mammoth structure ever was to being constructed. Even if it carried de Gaulle's approval, surely it would not have been so heartily embraced by Pompidou, and certainly not by Mitterand.

The tower was caught between a cybernetic fantasy and administrative reality. It would have towered over the other skyscrapers of *La Défense*—a giant kinetic spectacle machine. At its raised base, a computer control center would allow for automatic or manual control of the spinning panels, sound system, and projected lights. Schöffer saw this as a place where artists would occasionally utilize the *Tower* to produce their own

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[104] Schöffer, *La tour lumière cybernétique*, 17.

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works, using its system as their "instrument." Within the grid of the structure would be various viewing platforms, conference rooms, performance halls, cafés, gift shops, etc.. For Schöffer, the *Tower* would have been a destination for families on weekends, and for tourists.[105]

But the *Tower* could also have become a hub for a greatly extended "cybernetic city." For Schöffer, the key to achieving a state of urban equilibrium was the cybernetic programming of activities in all three of the urban tiers—work, residence, and leisure. The computer (or three, to be exact) was at the heart of a rationally-planned environment (Schöffer preferred the segregation of work and residence) whose circulation infrastructure was perfectly balanced, and whose architecture was perfectly suited to its various functions. The computers would have been at the hub of the flow of information, of the input/output of data and commands [fig. 3.63]. One computer was to process data on "information and behavior," another for "modification and perturbation [Schöffer's term for inevitable social upheaval due to technical or cultural reasons]," and the last for "Government orders and regulations." Presumably, many towers were foreseen for this city, as well as low-rise residential units, and leisure structures that harkened back to the *architecture parlante* of Ledoux [fig. 3.64].

Ionel Schein, who by the mid-sixties was one of the GIAP's most adamant critics, was also rethinking territorial *aménagement* in the mid to late sixties. And, although his ideas were at this point explicitly opposed to those of his previous GIAP colleagues, his conclusions were analogous. Like the others, he was occupied with circulation and achieving equilibrium of urban functions and pressures. And, like them, he wanted an

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[105] Schöffer, *La tour lumière cybernétique*, 73-75.

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urban infrastructure that would be able to adapt to unforeseen future exigencies. As we saw above, Schein demanded a new form of planification that was not abstract and detached from the material base of contemporary society, but rather was intimately connected to it. And, like so many other observers at that moment, he saw technological and economic advances as the defining characteristics of the new society.

But Schein was the most aware of all the "visionaries" of the sixties of the impending impact of the question of ideology. By 1967, he was explicitly discussing "socialist urbanism," and attempting to reconcile his own theories of the "urban mesh" with this stance.[106] This would have been a difficult task if Schein had chosen to pursue it. Although he didn't, he remained the most *engagée* of Ragon's circle. This becomes really apparent in the preface of his most systematic statement regarding urbanism, *Axiologie de l'aménagement du territoire* (1969). Here, Schein apologizes to the reader for offering a text written before the events of May-June 1968: "[n]o circumstantial rectification has been made to this text and no formal or ideological update has been made.[...] The reader will want to take this into consideration in formulating his critiques and contestations; the author thanks him for doing so."[107] It is difficult to say which aspects of his theories Schein felt would be received badly in the new post-'68

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[106] Ionel Schein, presentation in "Univers concentrationnnaire ou urbanisme socialiste," *Les cahiers du centre d'études socialistes* no. 74-75 (January, 1968), 14. Here, however, we must take into account the possible influence of the venue. Schein was not usually so adamant about speaking on "socialist urbanism" as when he was engaging a debate at the Center for Socialist Studies.

[107] Ionel Schein, *Axiologie de l'aménagement du territoire* (Paris: Vincent-Fréal, 1969), 4.

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environment, but it is likely that his emphasis on a vast network of communication and exchange took on a somewhat different connotation.

Schein established three fundamental parameters or bases for urban development: "production-consumption-exchange." Using these as the constants of planification, Schein elaborated a dialectical and dynamic theory of urban fabrics held in an evolutive tension, always developing, and always being modified. Schein offered no drawings or plans or maps. His ideas were purely infrastructural, and ultimately immaterial. He envisioned two overlaid urban "meshes" or "networks:" that of information, and that of exchange. The information mesh was socio-political—it served to educate the populace, and collect important data, etc; the "exchange" mesh was "technico-economic," and facilitated production and consumption. These meshes, for Schein, would cover the entire territory, in the form of telecommunications, computers, and physical roads and rails, distribution plants, urban zones, etc.. They were to exist in a kind of dynamic complimentarity, the one never being reduced to the ends or means of the other. Via this tension, *aménagement* would become an ever-changing process, in which the inhabitants of the urban milieu could participate in its constant renewal and adaptation. Physical environment and immaterial signals would interact, changing with technical progress and the political will of the majority.[108]

We could delve further here into Schein's notions of the urban fabric and "polyvalent space," but I am more concerned with establishing his proximity to the ideas of other Spatialists in France, even at a time when he was explicitly rejecting their ideas

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[108] Schein, *Axiologie*, 7-15.

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and calling for a "Paris-non-utopique."[109] Clearly, his rejection of their simplified formalism was valid, but in retrospect his formulation of an immaterial multimedia mesh fell into line with their own obsession with information and circulation. In the end, this obsession was shared by Paul Delouvrier, and all the other would-be "managers" of the territory in Paris. Circulation, exchange, equilibrium, adaptability: these were the keywords of urbanism in the 1960s, and the "utopians" were separated from the administration only by the degree and shape of implementation of these concepts.

[109] Ionel Schein, "Pour Paris 1," *Urbanisme* 33, no. 84 (1964), 73.

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Chapter 4:
Topologies

The Spatialist *schémas* for the Paris region demonstrate the paradoxical aspects of their urban ideas: an almost obsessive attention to technical detail that somehow resulted in a non-physical territorial infrastructure characterized by communication, movement, and exchange rather than material. This chapter will address both sides of this structural paradox, beginning with the former and concluding with the latter. I will first attempt to account for the persistence of the use of space frame structures in French utopian design in the sixties, and will then discuss the mode of living they were to engender—mobile and programmable. Of course, the real interest of these projects lies in the *terrain vague* of their imaginary synthesis—where physical, metallic structure gives way to social infrastructure.

I will also argue that this space must be understood in terms of topology, as it was understood in this context. So many meanings (often contradictory) were teased out of this very specific form of geometry that the word was at times in danger of being emptied of all significance. But its application to design concepts during the sixties provides a common link between otherwise disparate, sometimes antagonistic, tendencies that can be historically clarified by analyzing the specific use of the concept in each instance. For example, Nicolas Schöffer's notion of the "Five Topologies" is radically opposed to the phenomenological topology of Claude Parent and Paul Virilio's group Architecture Principe, but the opposition proves very instructive in terms of understanding the tensions within French utopian design during this period. Additionally, the frequent appearance of

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the term in the theoretical debates of the late sixties and early seventies is ultimately linked to earlier design issues and spatial concepts.

With incredible consistency, the topological territorial infrastructure of Spatial Urbanism was translated quite literally into the physical structure of the three-dimensional space grid construction or space frame. Why the space frame? Historically, space frames had been present at a number of key moments in the genealogy of modernism. Since the nineteenth century, metal, prefabricated building systems had appeared as the key that could eliminate the distinctions between art and science that, in the industrial and post-industrial ages seemed facile and anachronistic. Furthering this Hegelian teleology, space frames also promised to synthesize the organic and man-made, utilizing structural principles at least ostensibly derived from microscopic images of tiny organisms and organic materials like leaves and bones. Both rational and beautiful in their naked structural reality, these new structures expanded the promise of the *piloti* and open plan to extend the space properly shaped by architecture, and to further blur the distinctions between interior and exterior.

The space frame was a symbol of the new cultural potentialities of mathematics as applied to architecture, but also an anti-symbol—the transparent infrastructure whose role was purely passive aggressive, always ordering and directing, yet never being directly perceived. The space thus created was rational and transparent, yet simultaneously acted as a social catalyst for ludic activity. It allowed for architectural plasticity and the atmospheric play of light and color. This was not a classical space of delineated borders wedded to a cyclical time; rather it was an infinitely extensible space that called for a linear temporality. No longer was space to be the empty box of Renaissance perspective,

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complete with Cartesian delineations of inside and out, but it was to be infused with near-invisible geometric structures and their seemingly infinite variations. These infrastructures were to have a paradoxical kind of presence. They were invisible agents – ideal milieus for the functions, flows, objects, and people who were to course through them, yet simultaneously they were abstract—by necessity visible—embodiments of organizational logic.

By covering ever-vaster areas, there was no scale of space that could not conceivably be covered and climatized. Fuller's views of a domed Manhattan are the most famous illustrations of this logic [fig. 4.1]. The Spatial Urbanists added volume to this equation, filling space (and soon enough time) in all its dimensions with the web-like supports of a new urban existence. This "innovation"—the expansion of the space frame to the urban scale—is the basis for Banham's critique of the French school of Megastructuralists. For him, it was their naïve belief in the possibility of a multitude of very thin, light structural members being able to replace a massive support system that gave the French projects their air of out-modedness. As Banham suggested, the structure was never as light and transparent as initially conceived: "In all experience of tension structures the compression members tend to be thicker, more numerous and visually more obtrusive than the first pencil sketches had hopefully proposed, yet the myth persists."[1] (It should be borne in mind, however, that Banham's dismissals of the space frame aesthetic were not non-partisan. He asserted that even by the early fifties, the French

[1] Banham, *Megastructure*, 58.

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taste for lightness and abstraction "was about to be crushed throughout the world by the more 'crumbly' Brutalist aesthetic[...]."[2])

It is indeed astonishing that the fascination with space frames was as intense and long-lived as it was in the French context (though Banham would have prematurely banished them to the past even by 1951[3]). Probably due to the ascendancy of the technological discourse that was no doubt an aspect of economic optimism, a number of domestic and foreign engineers had a considerable influence on the French architectural imagination for the entirety of the *trente glorieuses*: The Frenchmen Robert Le Ricolais, René Sarger, Stéphane du Château, David Georges Emmerich, and the Germans Eckhard Schultze-Fielitz, and Konrad Wachsmann, the Englishman Z.S. Makowski, and of course the American forerunners Albert Kahn and Buckminster Fuller among others. As has already been suggested, many of these individuals were in direct contact with the Spatial Urbanists and GIAP, or were doing very similar projects on their own.[4]

The studies, models, and realized projects of these engineers and associated architects proliferated in the Architectural journals of the fifties and sixties. Invariably they signaled new structural possibilities, the physical properties of new materials, and the aesthetic potential of pure structure and accordingly the end of the segregation of

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[2] Banham, *Megastructure*, 58.

[3] Banham evokes Lionel Brett's assessment of the space frame-centric "Festival [of Britain] style" as being "flimsy and effeminate," as well as out of date in Reyner Banham, "The Festival Style: 'flimsy...Effeminate'?" in Mary Banham and Bevis Hillier, eds., *A Tonic to the Nation: The Festival of Britain 1951* (London: Thames and Hudson, 1976), 190-198.

[4] Most notably, René Sarger was always very close with Ragon and the other members of GIAP, participating in symposia, etc. Two of the CEA monographs published in collaboration with GIAP were devoted to Sarger and du Château respectively: René Sarger, "Structures nouvelles" *Cahiers du CEA*, no. 1, (1967); Stéphane du Château, "Structures spatiales," *Cahiers du CEA*, no. 2, (1967). Also, Schultze-Fielitz and Emmerich were members of Yona Friedman's group GEAM (see below) and involved in exploring the urban application of space frames.

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engineers (men of science) and architects (form givers). This chapter will briefly touch upon the larger history and significance of the space frame as it relates to the Spatial Urbanists and will discuss their use of space frames relative to other developments in the French context. In addition, I will include a discussion of one of the other great "themes" or devices of Spatial Urbanism: movement.

The ability to move through an urban structure, or to move or transform that structure itself was a concept that was intimately linked to the technology of the space frame. New transportation and communication technologies in the post-war period fueled this interest in and reassessment of time and space. Labor saving devices and a streamlined industrial process gave rise to a new discourse of leisure time. Further, the increasing use of automobiles, and their impact on the city was a constant concern. In concluding, I will demonstrate how and why this valorization of transience and play were linked to the physical structure of the space frame in the new environments proposed by the Spatial Urbanists.

Space Frames, a Selective History

In the second edition of the published account of the sixth congress of the CIAM, the Secretary of that organization, Sigfried Giedion, introduced, with some uncertainty, what he termed "the vaulting problem":

> At least a passing reference should be made to a problem still in its infancy, that of *vaulting*. Great uncertainty still prevails on this subject, but it is becoming increasingly clear that the vault, which will one day be regarded as characteristic of our age, will be closely connected with the whole question of *spatial supports and frameworks* such as are already being constructed by a few great engineers

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> and architects. They can be given almost any form. They consist of small, light constructional elements which support one another.[5]

To provide some provisional answers to this "problem," Giedion added an appendix to the text that included a section entitled "Space frame, a solution to the vaulting problem" that featured concrete and metal projects by Pier Luigi Nervi, Konrad Wachsmann, Eduardo Catalano, Amancio Williams's University of Tucuman project in Argentina, and others.[6] Without reading too much into Giedion's rhetorical posturing, it is worth inquiring from whence his uncertainty came. Because, as is well known, a decade earlier he was extolling the virtues of the space frame and the spindly space frame aesthetic under the aegis of "the new monumentality."[7]

Giedion, the architect José Luis Sert, and the painter Fernand Léger—co-authors of the initial Monumentality manifesto, which dates to 1943—seemed drawn to at least the idea of the large space frame for two reasons. First, the ability to vault a large space made it possible to achieve a vast, uninterrupted, enclosed or covered public space—the social core of the idea of the Monumental or commemorative. Second, there was the ability to attach to, or suspend from these structures "panels of different colours, textures, sizes; light elements like ceilings"; these "mobile elements" could "constantly vary the

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[5] Sigfried Giedion, ed., *A Decade of Contemporary Architecture* (Zurich, Editions Girsberger, 1954), 2.

[6] Giedion, *Decade of Contemporary Architecture*, 260-262.

[7] See especially José Luis Sert, Ferndand Léger, and Sigfried Giedion, "Nine Points on Monmumentality" in Ockman, *Architecture Culture*, 29-30; Sigfried Giedion, "The Need for a New Monumentality," in Paul Zucker, ed., *New Architecture and City Planning* (New York: Philosophical Library, 1944), 549-568. For a more general overview of these discussions, see Christiane and George R. Collins, "Monumentality: A Critical Matter in Modern Architecture," *Harvard Design Review*, no. 4 (1984),....

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aspect of the buildings."[8] "Monumentality" was achieved because the technical possibilities of vaulting and the aesthetic qualities of superadded elements would be used towards the creation of public spectacle—the space frame was simply the likely backdrop (and ceiling) for these less tangible phenomena that acted as social catalyst.

Banham has suggested that the Monumentality manifesto was the source for the aesthetic of Spatial Urbanism.[9] Although no direct link or influence is evident, the connection seems valid, if only by way of zeitgeist, and accounts for the consistency of the connection between the space frame and the synthesis of the arts in the post-war period. The predilection for large, intricate structures and various forms of added-on elements (decorative forms, flags, signage, etc.) came to be characteristic of this tendency, that was always most explicit at world fairs and expositions.

However, the general effect or aesthetic of this tendency can just as easily and perhaps more directly be traced to Russian Constructivism and Dutch de Stijl as to the more limited discourse of Monumentality. In addition, one very important distinction needs to be made between the idea of Monumentality as described by Giedion et al. versus the use of the space frame in French utopian design in the sixties. For Giedion, the use of structural systems was relegated to vaults, walls, and perhaps floors—surfaces, in other words, constituting a "new and vast façade."[10] In the French context of Spatial

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[8] Giedion, et al., "Nine Points on Monumentality," 30.

[9] Banham, *Megastructure*, 35.

[10] Giedion, et al., "Nine Points on Monumentality," 30.

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Urbanism, the frame was expanded to such a scale that the city was literally placed inside its structure—a development not anticipated by Giedion.[11]

The genealogical line of the space frame through modernism can be traced back much further than the idea of Monumentality, of course. Prefabricated cast-iron structures such as Joseph Paxton's *Crystal Palace* (1851), and the mathematical and technological developments that made such structures possible, are the obvious source of space frames. But the first "true" three-dimensional truss systems were built by Alexander Graham Bell in the first years of the twentieth century. These were based upon tetrahedral studies for kite designs, but Bell would go on to construct larger structures, such as the 80' tall, 5 ton observation deck erected at his home in 1907 that was constructed and raised by unskilled laborers in 10 days. Though he lacked the sophisticated production methods and materials available to post-war designers, Bell established the fundamental goals of space frame design—lightweight, strength, and span.

As implied above, the distinction between planar structural systems and three-dimensional ones was to become the key defining factor of space frames: "Forces which have been distributed up to now within a plane, are nowadays omni-directionally branching out into space. Most of the forces involved are balanced in this way, forming a homogenous field without peak loads which is able to withstand almost any outside loading. Inner stresses are reduced, cross sections of compression and tension members

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[11] Apparently, Ragon had sent Giedion a copy of *Où vivrons-nous demain?*, to which the latter responded with a letter that stated he [Giedion] was especially interested in the chapter on "new materials, new forms"—notably Ragon's discussion of space frames is in this chapter. But Giedion stopped short of any substantive comments, beyond referring Ragon to his own recently-published *Eternal Present* books. Letter from Sigfried Giedion to Michel Ragon, MRAGO.mx1/167.

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are decreased—with the result that less material and less weight is required."[12] In his important 1960 study, Curt Siegel also valorized the turn to three dimensions and its architectural potential: "Future historians will probably talk of a 'breakthrough' from two-dimensional to three-dimensional design. This will bring the engineer to the fringes of the architect's domain, the shaping of space. It is to be hoped that, in the future, the two will meet there more and more often."[13]

The first commercially-produced system of tubular members and connecting nodes was made available in Germany in 1943 (the same year as "Nine Points on Monumentality"). This system utilized what would become one of the most common node designs—a ball-shaped unit with threaded holes, into which bars could be screwed [fig. 4.2].[14] Other systems were developed subsequently—some with and some without nodes (those without would be connected directly to other members via specially shaped ends, or would be composed of pre-made polyhedral units that could be bolted to one another). With the development of these different systems came the mathematical discourse of loads, spans, static and dynamic stresses, structural deformation and elasticity, etc. The goal was always the minimization of material and mass, and the maximization of rigidity, strength, and area spanned, with the least possible number of supports touching the ground.

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[12] Wolfram Wienhold, preface to Z.S. Makowski, *Steel Space Structures* (London: Michael Jospeph, 1965), 5. Makowski was directly involved with Ragon and the GIAP as part of the British "branch" of the group.

[13] Siegel, *Structure and Form*, 184.

[14] John Chilton, *Space Grid Structures* (Oxford: Architectural Press, 2000), 2.

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The fifties and sixties saw the greatest proliferation and speculation of and about space frame structures. From Fuller's development of the *Octet Truss* system in the early fifties (adopted by Ford in its *Rotunda Building* in Michigan in 1953) to his tensegrity systems of the later fifties to Wachsmann's work with the United States Air Force beginning in 1959, the fifties were characterized by industrial and military experiments. The wider proliferation of the ideas thus developed was signaled by the International Exposition in Brussels in 1958. The symbol of that expo, the *Atomium* (A. and J. Pollak, and Waterkeyn, eng.), which housed a restaurant and various viewing platforms and displays, was like an inflated caricature of a simple space frame system [fig. 4.3].

The *Atomium*, though, also represented another significant source and preoccupation of the space frame discourse—the organic. Just as this work purported to mimic elemental structure, there was a constant connection between the design of space frames and the organic model. Sometimes designers attempted to "copy" structures in nature (Joseph Paxton did this in some of his early greenhouse projects). But, most often the organic served as a more conceptual model—a source of principles rather than a source for forms. Increasingly, after the Second World War, architects and engineers seemed even more drawn than before to texts about crystals, plant structures, and microscopic organisms. D'Arcy Thompson's *On Growth and Form* (1917) was the most influential text in this regard.[15] The limits of the organic model, however, were realized fairly quickly. Fuller eventually sought to expand the frame of reference to a kind of cosmological organicism—referencing the forces of the universe itself. The great French

[15] D'Arcy Wentworth Thompson, *On Growth and Form* (edition cited: Cambridge: Cambridge UP, 1959).

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engineer Robert le Ricolais (see below) realized that the organic offered an impossible, yet nonetheless inspiring model for the shaping of space through structure.

Despite the obvious presence of the organic myth, the industrial model continued to dominate the space frame discourse in the post-war period. From this point of view, the work of Konrad Wachsmann was extremely important and influential.[16] Wachsmann contributed in a tangible way to the theoretical and industrial production of metallic geometrical structures, but, like Fuller, he also fueled the fire of the mythology surrounding space frames that developed in the fifties and sixties. Wachsmann was more grounded than Fuller, however, who had issued such poeticisms as "Universe is omnitensional integrity" in constructing his own space grid mythology.[17] Without constructing a quasi-religion, Wachsmann still managed to grasp and utilize the aesthetic and cultural aspects of space frame technologies. Wachsmann insisted that the technological and methodological principles inherent to space frame design, which originated in the nineteenth century, represented the future course for all architecture, and in fact represented the paradigmatic "turning point of building."[18] Further, he called for totally objective, anonymous, team design methods (which he himself put into practice via his many students in universities in Europe and the United States).

But Wachsmann's most interesting contribution was his description of the way in which the key components of the space frame—node and connecting bar—demonstrated

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[16] Siegel, *Structure and Form*, 189.

[17] See Fuller's definition of "Tensegrity" in: R. Buckminster Fuller in collaboration with E. J. Applewhite, *Synergetics; explorations in the geometry of thinking* (New York: Macmillan, 1975).

[18] Konrad Wachsmann, *The Turning Point of Building* (New York: Reinhold, 1961).

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universal principles that could be applied to all design. The eradication of post and lintel construction, for Wachsmann, contributed to this new spatial conception. Describing the massive demountable hangars he designed for the United States Air Force in 1959 [figs. 4.4, 4.5], he said: "Quite indirectly, almost like a byproduct, there emerged, at last, a structure capable of communicating a perfectly new spatial experience by technological means, while simultaneously expressing ideas of the conquest of mass and free dynamic space on a scale previously unknown."[19] Not surprisingly, the spaces imagined by Wachsmann came to very much resemble those that Giedion, et al. also had in mind, with moveable panels, etc.[20] But the aesthetic ramifications of the space structure mentality as seen by Wachsmann, though utterly secondary to objective methodology, were sometimes radical. One of the most memorable studies of Wachsmann and his American students (Wachsmann had emigrated in 1941) was a theoretical project of tensional forces created by a prototype node unit they designed in 1953 [fig. 4.6]. In a complex web of lines of force, the same essential shape (the three-pronged node unit) compresses and expands to fill a potentially infinite space. Wachsmann was quick to point out that the striking visual qualities of this design were derived from purely mathematical—not morphological—design methods.

Wachsmann also recognized that the same methods could be carried over to all other realms of design, through the figure of a new, "universal designer" or "planner," whose "work will involve planning every kind of building, from the smallest to the largest, and will extend into areas of city planning; it will even have a certain indirect

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[19] Wachsmann, *Turning Point*, 186.

[20] Wachsmann, *Turning Point*, 231.

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influence on future regional planning."[21] Wachsmann's sentiments had a direct influence on Ragon's conception of Spatial Urbanism. Of course, Ragon would see more than just an "indirect influence" connecting space frame design and urbanism. Speaking of the *Atomium* of the Brussels Expo, Ragon stated:

> The Atomium of Brussels was only a symbol, but it is a symbol which could become, not only a spatial architecture of the future, but also of an organic urbanism such as that conceived by Konrad Wachsman:
>
> 'But I know that someday an order will prevail based on the repetition of a nucleus, a structural core of connections. It will be an order which informs the surfaces, structures, rooms, buildings, streets, plazas, parks, and cities and ultimately the whole panorama of the civilized world.'[22]

As noted above, the space frame ethos was most pronounced at world expos. In these contexts, industrial and commercial technologies paraded as the building blocks of possible habitats, and on occasion hints of Wachsmann's vision of an unbounded yet structured space were achieved. From the point of view of influence in the French context, two Expos were of key importance. The 1958 Brussels World's Fair was marked, not only by the influential *Atomium*, but by the participation of René Sarger, the engineer for the *French Pavilion* (1958), which helped set the aesthetic and technical tone for Spatial Urbanism. This work, as Banham points out, took on a somewhat talismanic significance within French discourse.[23] Sarger was a vocal and eloquent proponent of Spatial Urbanism, but it was this innovative structure that went furthest in supporting the hopes of the further application of space frames.

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[21] Wachsmann, *Turning Point*, 232.

[22] Ragon, *Où vivrons-nous demain?*, 70. Ragon is Quoting Konrad Wachsmann, "Vom bauen in unserer zeit," *Baukunst und Werkform* (January, 1957): 26-31, translated as "On Building in Our Time," trans. Lynette Widder, in Ockman, *Architecture Culture*, 269.

[23] Banham, *Megastructure*, 59.

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The architect of the *French Pavilion* was Guillaume Gillet, but it was Sarger's structure that received the most attention. Constructed with a combination of solid steel framing and roof elements held in place with suspension cables, the exterior of the building took on a butterfly shape [fig. 4.7]. The most notable feature from the outside was the giant "mast" that protruded from the entrance, and the web-like metal latticework (designed by Jean Prouvé) that formed the outermost cladding.[24] But it was the interior view that must have been the most striking [fig. 4.8]. Dominating the entrance hall was a single pylon, from which all of the primary structural members protruded (including the mast), emanating diagonally from a relatively small base to support the 12,000 m^2 canopy, or what the designers called "un grand parapluie."[25] The effect was distinctly Constructivist, but as Banham notes, this element influenced the French taste for "diagonality" that invariably accompanied space frame design.[26]

It was Expo '67 in Montréal, however, that was both catalyst and confirmation for the members of GIAP specifically [fig. 4.9]. Here, the space frame megastructure idea was tried out in earnest. Partially computer-designed (computers were used for engineering computations) structures formed platforms and exhibition spaces. Though the Expo is best remembered now for Moshe Safdie's *Habitat*, Fuller's *U.S. Pavilion* (a three-quarter geodesic dome with a 76 m diameter), and Frei Otto's *German Pavilion* (with Gutbrod, Kiess, et al.), other structures were equally revered at the time. The two connected pavilions *Man the Producer* and *Man the Explorer* (Affleck, Desbarats,

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[24] Sarger's extensively photographically documented at the archives of the Institut Français d'Architecture (IFA) in Paris.

[25] "Pavillon de la France," L'architecture d'aujourd'hui no. 78 (June, 1958), ... Quoted in Lucan, *Architecture en France*, 107.

[26] Banham, *Megastructure*, 59.

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Dimakopoulos, Lebensold, and Sise) were giant multi-layer space grids that achieved the artificial topography of which the Spatial Urbanists dreamt [fig. 4.10]. Banham noted with some enthusiasm that they truly gave "a notable sense of being in a megastructure, almost an Archigram project" or "one of Constant's 'sectors'" which created a "confusing" space in which "minor constructed situations would arise as visitors found themselves on an unpredicted balcony over the canal, in the presence of an unexplained exhibit, confronted by the silhouettes of thousands of other visitors in superimposed layers on bridges against the sky, or at the top of an escalator they were sure they had just descended."[27] He expressly does not mention Spatial Urbanism in this context, although it seems apparent that these super-technical, computer-aided structures were much closer to that aesthetic than to Constant's and the Situationists's (especially by this late date).

The Canadian-sponsored *Gyrotron* (1967; Kenny, Djurkovic, and Auger, eng.) also uncannily evoked the Spatial idea [figs. 4.11, 4.12]. The *Gyrotron* was composed of two mountainous structures (known as the Pyramid and Volcano) that were linked by a bridge supporting a suspended rail system that ran a circuit of the agglomeration. The interior spaces of the *Gyrotron* were created with cladding that was hung from inside the structure, thus leaving the grid exposed on the exterior. The apparent lightness of these structures, their expansive interior spaces, and the fact that all activities were suspended in mid-air made them some of the nearest approximations of the supposed sensation of Spatial Urban projects.

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[27] Banham, *Megastructure*, 115-116. Banham does not here acknowledge the contradiction he puts himself in by celebrating the quasi-Situationist aspects of these space frame structures, as opposed to the retardataire aspects of their obvious "Monumental" effects, that he decried earlier relative to Spatial Urbanism.

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If Banham was reluctant to connect the architecture of the Expo with Spatial Urbanism, the opportunity to point out the parallels was not entirely missed at the time. The industrial designer George Patrix acted as GIAP's ambassador to the Expo. In a subsequent article, entitled "The Triumph of Prospective Architecture in Montreal," he stated that:

> The Montreal Exposition will be a landmark in the history of architecture: the plastic and technological mutation of the urban setting which it proposes could assure that, instead of building dormitory cities of cold and rigid concrete and glass in which man feels he is captive, we construct with steel and light plastics a new poetry of mobility and create a human environment in which man feels once again in his element.[28]

It is characteristic of the French reaction that Patrix automatically saw the urban potential of the space frames and suspended monorails of Montreal and related them to the urban condition in France. He does not explain in detail, however, how this three-dimensional city would place man more "in his element" than the concrete of the *grands ensembles*.

Topology and the Space Frame, and Beyond

By the late fifties, the engineer Robert Le Ricolais [fig. 4.13], often called the father of space frames and considered by Ragon to be a precursor of Spatial Urbanism, defined architecture as "*a science of combinatorial arrangements of space.*"[29] In this characteristically over-rigorous definition, Le Ricolais managed to capture part of the fascination of the space frame, beyond its technical specifications. It promised nothing

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[28] Georges Patrix, "The Triumph of Prospective Architecture in Montreal," *Cimaise* 14, no. 80-81 (April-May-June-July, 1967): 88. (The English translation provided in the source has been slightly altered by the author.)

[29] G. Robert Le Ricolais. "Toward Creative Design," unpublished manuscript c. 1958, G. Robert Le Ricolais Collection Philadelphia, Vol. I (University of Pennsylvania Architectural Archives), n.p. [emphasis original].

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less than the "filling" of an entire volume of space with a conceptual and physical structure, mathematically defined, yet open and extensible. For Le Ricolais, one branch of mathematics presented itself as the ideal tool for the creation of such structures: topology.

Topology is, strictly speaking, a kind of geometry. In the most general sense, a topological figure is one in which the relation of parts remains constant, even when the figure is subject to various continuous deformations. More specifically, topological figures are purely relative: points are established in relation to one another, and not via external values such as length or volume. Topology is thus a qualitative geometry, which places more emphasis upon the continuity of points than the limits of surfaces. Topology also allows for the mathematical description of un-orientable and single-surface forms, examples being the Möbius Strip and the Klein Bottle.

But, during the sixties, in France and elsewhere, the concept of topology came to be much more than an approach to geometry. It came to represent the possibility of the rigorous and mathematically-consistent description and generation of morphologically undetermined form, of open and dynamic forms, of free forms that were nonetheless internally and logically consistent. Again, Le Ricolais:

> Topology is not concerned with the idea of measure so common in scientific language, but concentrates on the study of Form in its most generalized properties, and this in a very curious way. The details of form are of little interest to the topologist, whose major interest is focused on the fundamentals of form, as an example, two forms such as a square and a circle may actually appear to us as quite different, yet, they are topologically identical, or to use the proper term "homomorphic," which means that a continuous deformation is capable of bringing a circular shape into a square or vice versa, and this without changing the fundamental properties of the configurations. This erosion of contour,

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> neglecting the local or the incidental to reach the absolute quality of form is a distinctive feature of this discipline.[30]

But the relationship between architectural structure and topology was not self-evident, although it may have seemed so at the time. An interpolation was necessary in order to translate the language of pure mathematics to that of engineering structures:

> Since topology ignores measure and is related only to form, it is vain to expect from a topological approach a set of quantitative informations [*sic*] related to different systems of structures.
>
> Yet, in some indirect way it may be possible to gather general ideas concerning various types of structures, topology will also help us in establishing a concise definition of a new structural system which we have called 'space-grid.'[31]

Basing his observations upon the most fundamental formula of topology, Euler's Law, Le Ricolais noted, "what happens in space...has nothing to do with the idea of area, with which space is often confused."[32] As the passage above implies, the natural outcome of structures generated via topological methods would, in their purest form be grids made of many small members, with multiple points of connection, spanning large areas, or space frames.

Le Ricolais has been acknowledged as one of the true originators of the space frame fascination in the mid-twentieth century. He was also one of the great poet-engineers of the postwar period who, like Fuller, saw engineering structures as having profound resonance with other natural, technical, and maybe even spiritual phenomena.

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[30] G. Robert Le Ricolais. "Topology, the Cornerstone of Structures," Unpublished manuscript, 1958. G. Robert Le Ricolais Collection, vol. III (University of Pennsylvania Architectural Archives, Philadelphia), 1.

[31] Le Ricolais. "Topology, the Cornerstone of Structures," 4.

[32] Le Ricolais. "Topology, the Cornerstone of Structures," 1. Euler's Law: $P - E + C = 1$ (where P = polygon, E = number of lines, and C = the number of intersections of lines). Interestingly, it was Descartes who first described this law in 1640, and Euler revived it in the following century.

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He sought, as did other designers of space frames, the impossible holy grail of structures: "zero weight, infinite span."[33] Le Ricolais was born in Nantes, where he eventually worked in the Ponts et Chausées (he was trained as an engineer by the military), but moved to the United States after he discovered his interest in designing space frames and truss systems; he thought he might have a more appreciative audience there. Though he had little success at courting American industrialists to buy and adopt his ideas, he did begin teaching at the University of Pennsylvania in19..., where he developed an intense student following. It was also here that he met and became friends with Louis Kahn. It has been observed that Le Ricolais influenced Kahn's and Tyng's adoption of the hexagonal space frame and floor system in the City Tower project (1952-1953).[34]

But most of Le Ricolais's ideas remained obscure. He himself felt that his work was trapped in between so many disciplines, that there was never any real hope of acceptance.[35] The design of space frame systems, for Le Ricolais, drew upon botany, engineering, mathematics, etc., and was also profoundly intuitive. He understood that despite the rigor of some of his postulates, the coherence of all the elements of a given structure and the selection of a particular form were often not based on purely empirical grounds. For Le Ricolais, topology, because it was "the science of connections" was the

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[33] Robert Le Ricolais, "Things Themselves are Lying, and so are Their Images," *Via* 2 (1973): 81.

[34] See Irene Ayad, "Louis Kahn and Space Frames," in *Beyond the Cube: the Architecture of Space Frames and Polyhedra* (New York: John Wiley, 1997), 133-134. Kahn's earlier fascination with the arachnian evident in his "Monumentality sketches was, according to Ayad, more likely derived from his study of August Choisy and Violet le Duc, to whom he was introduced by another great French architect/engineer, Philippe Paul Cret.

[35] See the interview that is really a summary of his key ideas: Le Ricolais, "Things Themselves are Lying," 80-109.

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"Ariadne's thread" that might possibly unite all of this disciplinary and methodological divergence.[36] According to Marc Mimram's excellent study of Le Ricolais, he was the first to apply topological principles to the design of space structures.[37]

For Le Ricolais, this specific form of "rubber geometry" was at the heart of the importance of the adoption of polyhedral space frames and their principles for architecture and planning. In the most direct way, topological operations, such as "duality," "truncation," "stellation," and the principle of "automorphism" establish the form of polyhedra because they govern the relations between their faces, edges, and points of convergence [fig. 4.14]. In doing so they determine the behavior of octahedrons, tetrahedrons, dodecahedrons, etc., when subjected to various transformations.[38] These principles could be transposed to space frame design, in order to arrive at the most economical structure—one in which the length of bars and number of connecting nodes allowed for the optimum variance of strength and weight.

Le Ricolais had his own ideas about what this optimum variance might be. He criticized Fuller's geodesic system as being inefficient, because it used far too many nodes and hence connecting bars, which were also too short.[39] In his own dome systems—the "Trihex" and "Starhex"—he employed extremely long bars, and as few

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[36] Robert Le Ricolais, "Trend Towards a Dynamic Architecture," unpublished manuscript, G. Robert Le Ricolais Collection, Vol. III. (University of Pennsylvania Architectural Archives, Philadelphia), np.

[37] I have found no evidence to contradict this. See Marc Mimram, *Structures et formes* (Paris: Dunod/Presses Ponts et Chausées, 1983), 3. Mimram's work is really the only historical/interpretive work on Le Ricolais, I have relied upon his discussion of topology to situate Le Ricolais's work.

[38] Mimram describes the specific application of these operations much more eloquently than I can: Mimram, *Structures et formes*, 38-41.

[39] Le Ricolais, "Things Themselves are lying," 87.

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connections as possible [fig. 4.15]. Eventually, he would come to the rather heretical conclusion that in order to achieve truly lightweight structures, it was necessary to move away from utilizing many light members, whose sum was always heavier than desired, and instead to employ a smaller number of larger, heavier members. This approach led to his very distinctive designs and models, which always seem somehow more crude and improvised than those of his engineer-contemporaries [fig. 4.16].

Alongside his use of topology, Le Ricolais also employed the results of his research into soap films, and always maintained a certain ambivalent relation to the organic model. For the soap film experiments, a small wire frame would be dipped into liquid soap, and the resulting "skin" that filled the wire frame, like a bubble-blowing device, would suggest certain structural principles. The most direct result of these experiments was the "monkey saddle" structure—an undulating frame with three high and three low points [fig. 4.17].

The performance of soap films was also related to another area of interest for Le Ricolais, and so many other modernists: the realm of organic forms and structures. While I mentioned this above in a more general sense, I want here to draw attention to Le Ricolais's own views on the subject. For him, the organic world provided a sense of inspiration and frustration. He, like others, was influenced by the drawings of Ernst Haeckel, D'Arcy Thomspon, Charles Darwin, et al.. He was especially interested in Darwin's drawings of radiolarians, whose structure illustrated the principle of automorphism because they contained consecutive layers of identical forms [figs. 4.18, 4.19]. Le Ricolais was also drawn to the study of leaf and bone structures. The latter particularly was a source of fascination. A picture that Le Ricolais took of microscopic

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bone filaments became one of the more famous images of the postwar period, especially in France [figs. 4.20, 4.21]. But for Le Ricolais, this incredible natural structure served as a constant reminder of the shortcomings of man-made structures, which could never approach the formal ingenuity or functional diversity of natural forms. It also suggested to him what he felt was the true nature of space frame structures: "The complexity of [the bone structure's] construction was baffling. None of the joints was like another. But if instead of reasoning with the solids, one reasoned with the voids, the truth appeared. The science of structures, I discovered, consists in making holes."[40]

Here is the true conceptual basis for the space frame: that space is already somehow filled with a homogenous structure, and the physical grid is a reflection or an embodiment of it. It is here that we have to recognize the paradoxical status of the space frame, not only in Le Ricolais's thought, but in many others' as well. In a sense, the physical structure of the frame mattered much less than the conceptual partition of space. It was the idea of "empty" space being filled with an immaterial structure that was to prove so compelling for Le Ricolais and his contemporaries. All of the drawings, equations, and models that were produced were, in a sense, directed toward this idea. But, it is necessary to point out that this ideal structuration was by no means static. The topological method also allowed for the description of combinatorial and temporal changes.

By introducing the idea of topological deformation into the design of space frames, Le Ricolais also established the principles guiding the transformation and mobility of these structures. The principle of movement was inherent to topology,

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[40] Quoted in Michel Ragon, *The Aesthetics of Contemporary Architecture* (Neuchatel: Griffon, 1968), 130.

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insofar as many topological figures can only exist in time, via continuous deformation. This is the case with the Klein Bottle, for instance, which is a continuous surface form that, although it can be physically modeled or drawn, only exists in a mathematically coherent form within the process of its transformation. Drawings of the familiar bottle form are merely composite images or solidified traces of this process. Thus, for Le Ricolais, topology was important, not only because it allowed for the mathematically consistent development of structures, but because it was inherently dynamic.

It is therefore not surprising to find Le Ricolais transposing his structural principles to the urban scale. For him, the same economy of material and structure applied to the urban concept of circulation: "[...]our future objective may not be at all how to structure buildings, but how to structure circulations—this flow of movements made by hundreds of thousands of inhabitants and vehicles."[41] In his *Skyrail* (1962-1968) project, for instance, Le Ricolais imagined a suspended rail system traversing a city in a pattern based upon his *Trihex* structural system [fig. 4.22]. Just as the *Trihex* structure achieved economy of material and form in its dome configuration, it also allowed for efficiency of movement in the *Skyrail* system, with fewer interchanges and more direct routes. He also used the *Trihex* idea for road circulation and planning: "In the history of Western civilization, it is this geometry of right angles that has formed almost the exclusive basis for determining the arrangement of urban streets and lots. But a systematic topological analysis of various grid patterns based on the study of the number of intersections for a given area and a unit segment length yields an interesting

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[41] Le Ricolais, "Things Themselves are lying," 93.

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answer to the bothersome problem of circulation."[42] Here, we see an amazing transposition in the topological qualities of grids, from the strength/weight ratio of structures, to the circulation/intersection ratio of urban traffic systems.[43] That such a transposition was possible is not only a testament to Le Ricolais' originality of thought, but to the flexibility of the rhetoric of topology itself.

Perhaps not surprisingly, we find Michel Ragon as the main facilitator of these connections. Le Ricolais always maintained close contact with his French colleagues, and often visited Paris, and published in *L'architecture d'aujourd'hui*, *Techniques et architecture*, etc.. In 1968, his hometown of Nantes held an exhibition of his work, for which Louis Kahn wrote the introduction.[44] But Ragon was intent on depicting Le Ricolais as the father figure of Spatial Urbanism.[45] Ragon saw Le Ricolais's structural models as the prototypes for entire cities—a totally erroneous view. Le Ricolais was also often listed as a GIAP participant, though it is unclear what his role might have been, besides "correspondent" or patron, etc.—he does not seem to have participated in any of the symposia or exhibitions. Furthermore, it is clear that Le Ricolais was more than a little ambivalent about the futuristic designs of his French friends, as evidenced by the quote cited at the beginning of the introductory chapter of this dissertation.

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[42] Robert Le Ricolais, "The Trihex: New Pattern for Urban Space," *Progressive Architecture* 49 (Feburary, 1968): 118.

[43] Le Ricolais seemed unconcerned that this system negated the traditional city block "footprint." To avoid this problem, his circulation systems could be suspended, or built outside of existing city infrastructures.

[44] See the catalogue: *Le Ricolais: Espace, mouvement et structures* (Nantes: Musée des Beaux-Arts, 1968).

[45] See Michel Ragon, "Robert Le Ricolais: précurseur de l'urbanisme spatial," *Arts*, no. 871 (May 30-June 5, 1962): 2.

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But the principles of topology became an implicit part of Spatial Urbanism, even if they were never as fully developed as they were in Le Ricolais's work. By the mid to late sixties, there were a number of other important engineers in the French context who were fueling the fascination with geometrical structures and urban forms. Le Ricolais was often acknowledged as an important forerunner in the French context,[46] where space frame research proliferated during the sixties in both the utopian and practical directions. As we have seen in other aspects of Spatial Urbanism, the practical and the utopian were sometimes difficult to separate. Among the leading figures in both domains in France were René Sarger, David George Emmerich, Stéphane du Château, and the German-born, but French-educated engineer Eckhard Schulze-Fielitz.

Without turning this analysis into a laundry list, I want to briefly evoke the work of these individuals to gain a sense of the ramifications of the adoption of the space frame in architectural and urban research in France at this time. Of particular importance (because of their relation to Spatial Urbanism) are Sarger, Emmerich, and Schulze-Fielitz. Sarger, whom we have already encountered above was an active participant in the GIAP, and a central figure in the French discourse on structures. He was especially drawn to the idea of cable suspension structures, and hybrid structures that would incorporate elements of suspension structures, space frames, and reinforced concrete shell structures as well.[47] Like others in the field, Sarger looked to space frames to

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[46] See, for Instance, Stéphane du Château, "Structures Spatiales," *Cahiers du Centre d'études architecturales*, no. 2 (1967): 14.

[47] One of the best overviews of Sarger's work remains his own "Structures Nouvelles," *Cahiers du CEA*, no. 1 (1967): entire issue. Sarger organized a series of events—symposia and study days for students—at the CEA in Brussels in late 1966. The *Cahiers du CEA* was the publication of these proceedings.

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revolutionize the historical progress of architecture, and to completely alter the traditional, segregated roles of the architect and engineer. In addition, he saw space frames as the ideal form of the future city, which could accommodate growth, change, and unforeseen exigencies.

Though Sarger normally left the explicitly "visionary" work to his GIAP colleagues, such as Maymont, he did propose a Parisian project of his own as late as 1973 [fig. 4.23]. This megastructure would have been a gigantic "stacked" agglomeration, resting on a multi-story bridge structure covering the *Péripherique* and encircling Paris.[48] The bridge itself would have been a suspension structure, although its appearance of lightness was minimized by the large residential quarters that were also incorporated into the project and centered on the bridge's pylons. Though the arachnian forms of the space frame are here suppressed in favor of the blocky, this structure did have the modular capacity for transformation, etc., and can therefore be seen as an extension of Sarger's interest in the possibilities of structure in the broadest sense. This project illustrates the principle whereby the space structure would act as a kind of shelf or rack for architectural volumes—a conception clearly pioneered by Friedman, and picked up by Emmerich, and du Château as well. It also gives us yet another example of the obsession with circulation that was still evident, even post-'68.

Much more than Sarger, David George Emmerich (1925-1996) took up Le Ricolais's topological ideas, and developed them.[49] Emmerich was an eccentric and very

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[48] Ragon, *Prospective et futurologie*, 122-124.

[49] Certainly the best and most comprehensive source on Emmerich, and one which I have relied upon a great deal is the exhibtion catalogue: Marie-Ange Brayer, ed., *David Georges Emmerich, architecte-ingénieur: une utopie rationelle* (Orleans: HYX, 1997), 54-64. This exhibition took place at the Musée des Beaux-Arts in Orléans, and comprised many of

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outspoken proponent of the wholesale adoption of modular building systems to create flexible architectural and urban structures. He felt that architects, "instead of continuing to prostrate themselves before *Paquebots*, flying fortresses, and other outdated contraptions, would do better to turn for inspiration to crystals, soap bubbles or even paper-folding techniques (*emballage*)[...]."[50] Emmerich had been associated with Friedman since the late fifties, when he joined the GEAM (see below), and he, like Friedman, continued to explore the ludic possibilities of structural building. Unlike Friedman, he remained involved in the morphological and mathematical description of specific structural systems, or in other words, in the physical structure itself. He employed Le Ricolais's topological idea, with a bit of modification to Euler's Law,[51] created a series of semi-famous tensegrity models using bits of wood and chain [fig. 4.24], and also proposed his own housing and urban projects.[52] Of these last, the most striking is a circa 1968 project for a vast dome structure with architectural volumes suspended inside [fig. 4.25].

Emmerichs works held, also in Orléans, by the Fonds Régional d'Architecture Contemporaine—the most important collection of French utopian design in the world.

[50] D.G. Emmerich, "L'architecture et le milieu," *Techniques et architecture* 28, no. 4 (October, 1967): 123-126.

[51] D.G. Emmerich, "Structural Economy," *Architectural Design* 37, no. 7 (July, 1967): 382.

[52] Buckminster Fuller filed the first patent for "Tensile-Integrity Structures" in 1959. He, apparently, was introduced to its principles at Black Mountain college by the sculptor Kenneth Snelson. One of the few large-scale examples of the application of tensegrity principles is Cedric Price's *London Zoo Aviary* (1963). For a complete discussion, see: Ariel Hanaor, "Tensegrity: Theory and Application," in *Beyond the Cube: The Architecture of Space Frames and Polyhedra* (New York: John Wiley and Sons, 1997), 385-408.

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But it was in his teaching that Emmerich really explored and elaborated upon the conceptual and plastic possibilities of the topological approach.[53] He, like Le Ricolais, understood that topology provided some basic guidelines for generating structures: the ratio and configuration of connections and nodes. He also began to see topology as a qualitative science of connection itself. In other words, he recognized that topology could be applied to any space, any system, as a way of bringing order to the various elements within it. Emmerich understood topology as a spatial grammar:

> The neighborhood relations that exist between the elements and their environment determine the structure, and this independently of the nature of the elements or points of a set, whether they be points, curves, surfaces, forces, or geometric entities of any sort is not, in principle, of importance. To define a structure all that counts is the situation of the elements, that is, the topology of the set—one could say its architecture.[54]

Herein lies the fundamental import of topology in structural design—it could be seen as both physical support system and conceptual, syntactical "structure," giving both order and freedom of movement to *any type of element* within the configuration.

Emmerich also saw topological polyhedral modularity as the key for a new era of urban planification. By creating flexible standardized systems, he maintained, it would be possible to allow for a near-infinite number of different combinations of spaces and configurations.[55] Furthermore, these various configurations could be effected by the architect and by the inhabitant alike. Here we see the proximity of Emmerich's ideas to

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[53] Fortunately, there are two very thorough documents that record Emmerich's lectures at the ENSBA, and at the University of Washington: D.G. Emmerich, *Course in Constructive Geometry: Morphology* (Seattle: University of Washington Press, 1970). See also Alain Chassagnoux, "La pédagogie selon David Georges Emmerich," *David Georges Emmerich, architecte-ingénieur: une utopie rationelle* (Orleans: HYX, 1997), 54-64.

[54] Emmerich, *Course in Constructive Geometry*, 26.

[55] D.G. Emmerich, "L'architecture et le milieu," 123-126.

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those of Friedman, though, again, I would stress Emmerich's greater reliance upon and interest in the technical structural aspects of these ideas. Emmerich continued to demand that architecture and urbanism incorporate the basic human proclivity for ludic or play activity (see below). Accordingly, he proposed structural systems—closely related to the housing scheme mentioned above—that would incorporate the idea of what Emmerich called "construction games," in which basic elements (usually comprising individual dwellings) could be mixed and reconfigured like children's building blocks. One such system was based upon rather solid rhombohedra [figs. 4.26, 4.27]. This system, even more so than those of Friedman, is subject to the criticism that, regardless of the quantity of possible combinations of the elements, the elements themselves remain very limited minimal cells in which few people would actually want to live, even if they were provided with freedom of placement and combination. But Emmerich's topological "construction games" were significant, if only because they had a measurable impact on some ENSBA students, three of whom, Antoine Stinco, Jean-Paul Jungmann, and Jean Aubert, went on to found the Utopie group with Jean Baudrillard and Hubert Tonka, which inflected architectural ludicism with a critical content in the late sixties.[56]

Eckhard Schulze-Fielitz (b. 1929) was to become one of the most important commentators on the use of space frames and topology in the construction of a Spatial Urban infrastructure. He was associated with Friedman and Emmerich in the GEAM (see below) since the late fifties, then with the GIAP, and continued to do structural research and participate in building commissions in the sixties and beyond. Like all the other structural engineers at this time, Schulze-Fielitz seemed fixated on the idea of a

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[56] See Stinco's brief account in Dessauce, ed., *The Inflatable Moment*, 69.

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homogenous, crystalline space—a space filled with polyhedral structures that would form a kind of vast urban surface suspended above the earth [figs. 4.28]. For him, this kind of space was analogous to music—it was *a priori* abstract, and although it could support infinite diversity, it was rigorously structured, or "measured" just like musical rhythm.[57]

Though Schulze-Fielitz never fully explained his understanding of the application of topology to space structures, it is apparent that he saw it as one of the key approaches.[58] It seems that he considered topology one of several ways to achieve his main goal: the ideal system for ordering space. This was really his main preoccupation: the systematic and morphologically consistent partitioning and ordering of space via structure. Furthermore, he was fascinated by the possible balance or interplay between the concept of mass production and individual freedom, two tendencies that he considered "only apparently mutually exclusive."[59] Space frames were the perfect means of eradicating this "apparent" contradiction. They could be mass-produced, were rigorously designed, yet were also susceptible to the important principle of "modulation," or modification:

> The space structure is a macro-material capable of modulation, analogous to an intellectual model in physics, according to which the wealth of phenomena can be reduced to a few elementary particles. The physical material is a discontinuum of whole-number units, molecules, atoms, elementary particles. Their combinatorial possibilities determine the characteristics of the material.[60]

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[57] Eckhard Schulze-Fielitz, "Une théorie pour l'occupation de l'espace," *L'architecture d'aujourd'hui* 33, no. 102 (June-July, 1962): 78, 80.

[58] "Serial building will be influenced by geometry, topology, group theory and the principles of combination." Eckhard Schulze-Fielitz, "The Space City," in Conrads, *Programs and Manifestos*, 175.

[59] Schulze-Fielitz, "The Space City," 175.

[60] Schulze-Fielitz, "The Space City," 175.

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Herein lies the fundamental attraction of the space frame, not only for Schulze-Fielitz, but for so many others: the topological promise of order and freedom coexisting, of Valery's "greatest liberty born of the greatest rigor." We also find in Schulze-Fielitz's ideas the great refrain of this period, which is the search for the ideal urban infrastructure—Armand's "supple orientations," etc.. It is also the principle of modulation that remains at the center of Schulze-Fielitz's fanciful description of the Spatial City:

> It is modulation of the spatial structure according to kind, size, material, and position that permits us to take the daring step of presenting it as a comprehensive means of town planning. The space city is a discontinuous continuum, discontinuous through the demarcation between the part and the whole, continuous through the unalterable possibilities of alteration. In a free society the perfect planning of a city is neither possible nor desirable; it means fixation that impedes unpredictable developments.
>
> The space city, on the other hand, is an agglomeration of various spatial structures in pursuance of development; the ductus of the structure steers the unavoidable proliferation into ordered channels; freedom lies in the infinite possibilities of combination.[...]
>
> The space city is the structural, systematized, prefabricated, growing or shrinking, adaptable, air-conditioned, multi-purpose space labyrinth that can be fitted together or taken apart at will.[61]

Schulze-Fielitz's work provides probably the most literal and direct application of the topological principles of the space frame to the ideas of mobility and freedom in the Spatial City [figs. 4.29, 4.30, 4.31, 4.32]. But the same core ideas were present in the work of many other designers. Friedman used a different vocabulary but his goals were essentially the same—not surprising since the two worked closely together under the auspices of Friedman's GEAM.

Engineers were not the only ones interested in the potentials of topology as applied to architecture and urban planning. The notion that any set of elements, or any

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[61] Schulze-Fielitz, "The Space City," 175-176.

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ensemble could be provided with an underlying rational, yet flexible structure, appealed also to Nicolas Schöffer, who incorporated the idea of topology into his conception of the cybernetic city, which we encountered in the previous chapter. For Schöffer, topology provided a way to push the urban environment towards ever-greater states of immateriality, while still maintaining a sense of order. He asserted that in his cybernetic world, the new materials of construction would not be solid materials, but phenomenological and sensorial ones. Perhaps echoing the immaterial architecture proposed by the painter Yves Klein (see below), Schöffer suggested a new system of urban design based upon what he described as "The Five Topolgies" [fig. 4.33][62]

The five topologies were as follows:

1) Time—Topology of rhythm.
2) Light—Topology of light
3) Sound—Topology of the audible
4) Climate—Topology of climatic currents, natural and artificial
5) Space—Topology of space.[63]

In this rather poetic use of the terminology, topology is used by Schöffer as the fundamental rhythm (manipulable technologically) of the elements of perception. Each was to form one of the fundamental layers in the formation of the new territorial environment, ordering an urban ensemble, which was in turn topologically and cybernetically linked to neighboring ensembles. Clearly, we can see here Schöffer's interest in the technological manipulation of the human senses, in his understanding of the entirety of human activity and experience as a complex system, and finally, in the

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[62] Schöffer's discussion of these ideas appears in virtually identical form in several places, two of which are: Nicolas Schöffer, "Qu'est-ce que le spatio-dynamisme?" in Ragon, ed., *Les Visionnaires*, 25-31, and Schöffer, *La ville cybernétique*, 110-119.

[63] Schöffer, "Qu'est-ce que le spatio-dynamisme?" 26.

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cybernetic enhancement of human experience via his understanding of topology. His city was to be one of constant spectacle, in which light, music, and movement were brought together in such as way as to facilitate work and leisure, by bringing perceptual effort into a state of perfect state of stimulation that never approached psychic stress.

However, for the moment, I simply want to highlight the ease with which the topological idea was appropriated for an ever-expanding set of uses and definitions in French utopian design. Schöffer's adoption of the rhetoric of topology signals this proliferation.[64] Moreover, this proliferation is accompanied during the sixties by a dilution of the mathematical specificity of the term, in favor of a more generalized and connotative usage. Such is often the case with trendy catchphrases. In this architectural climate, however, the appeal of topology was precisely that it offered a means to articulate a path beyond the paradoxes that plagued the very idea of the Spatial City, specifically the paradoxes of control and freedom, of rationality and expressionism that seemed irresolvable. Most astute commentators on the Spatial idea acknowledged the existence of these contradictory elements, but sought to place the stress upon their spatial relationships, as opposed to their antagonistic natures. The syntactical and relational nature of topology provided the perfect model for such a problematic operation. It provided the mathematical language of the physical structure as well as the philosophical language of human actions and experiences.

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[64] We also find Maymont utilizing the term: "One part of human happiness finds its roots in the equilibrium of biological and emotional functions, whose satisfaction poses a topological problem: the development and the technical efficacy of space." Maymont, "Proposition pour Paris," 18.

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Groupe d'Études d'Architecture Mobile

As we saw above, the marriage of the idea of a mobile structure, and the specific choice of the space frame for such a project had its source in the late 1950s with the formation of Yona Friedman's Groupe d'Études d'Architecture Mobile (GEAM) [fig. 4.34]. As Friedman has recounted, the GEAM grew directly out of the ruins of CIAM. Friedman had attended the 1956 meeting in Dubrovnik, and was disillusioned by what he perceived as the failure of the participants to provide sufficient solutions to the problems of adaptable and mobile building that were part of the rhetoric of the final meetings.[65] Thereafter, he attempted to solicit the support of members of Team 10 for his ideas about adaptability and user participation (he sent his manifesto on *Mobile Architecture* to Jaap Bakema and George Candilis), but they, along with Alison and Peter Smithson demonstrated at the meeting at Bagnol-sur-Cèze that they were "violently opposed" to his ideas.[66]

Friedman also sent his personally-published manifesto [fig. 4.35] from Israel to Le Corbusier, Buckminster Fuller, André Sive, Jean Prouvé and the sociologist Roger Caillois (see below), among others.[67] He received more favorable responses from Le

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[65] Friedman discusses these events in several places, but the first was perhaps the preface to the first privately-published and distributed copy of *L'architecture mobile*, (Paris: privately published), np.

[66] This description is Ragon's, *Prospective et Futurologie*, 333. Friedman indicated to me, however, that Bakéma was more receptive than Alison and Peter Smithson who demonstrated extreme antagonism to Friedman's ideas; Interview with Friedman April 2, 2002.

[67] This list of recipients has been compiled from several sources: Friedman's own account...., Ragon, *Prospective et Futurologie*, 333, and Joan Ockman, *Architecture Culture*, 273. It must be kept in mind that *L'architecture Mobile* saw several "releases": the first in 1957, just before Friedman's move to Paris in October of that year, and another privately-printed edition of December, 1958. No sources specify which copy was sent to whom, etc. This is purely academic, in so far as the text and ideas changed little from one version to the next.

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Corbusier and Fuller, with whom he established and maintained a correspondence. The fundamental tenets of *L'architecture mobile* first appeared, however, as early as April of 1957 in the German journal *Bauwelt*, where it was published by Günther Kühne, whom Friedman had met in Dubrovnik.[68] Friedman sent this text from Haifa, where he lived, completing his architectural studies at the Technion, until August of that year, when he relocated to Paris.[69] Throughout the many appearances of the simple text, the core ideas remained essentially the same: "New constructions serving for individual shelters must: 1. touch a minimum surface of the ground; 2. be demountable and movable; 3. be transformable at will by the individual inhabitant."[70] These were the core ideas of mobility that Friedman would begin incorporating into his more developed urban ideas around 1960, which were discussed in the previous chapter.

Friedman met with several other young architects and engineers in Paris in 1957 to discuss the possibility of forming a new research group. The following year in March, the first meeting of the GEAM took place in Rotterdam. The founding members were Friedman, Emmerich, Jean Pecquet (Friedman's Paris associate), Jerzy Soltan, and Jean Trapmann.[71] In the following months, these members were joined by Werner Ruhnau, Günther Günschel, Frei Otto, Paul Maymont, Eckhard Schulze-Fielitz, and others (Soltan was no longer associated with the group after the initial meeting). According to Ragon,

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[68] Yona Friedman, "Ein architektur-versuch," *Bauwelt* 48, no. 16 (April, 1957): 361-363.

[69] A good chronology of Friedman's life can be found in *Structures Serving the Unpredictable*, 126-129.

[70] Yona Friedman, "Program of Mobile Urbanism," in Ockman, *Architecture Culture*, 274.

[71] Ragon, *Prospective et Futurologie*, 327.

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Paris was selected as GEAM's official headquarters because of the presence of Emmerich and Friedman.[72]

Friedman was undeniably the main animator of the group, but GEAMs's other members played important roles in the culture of fifties and sixties architecture. Certainly the most famous of the participants was the German Frei Otto (b. 1925). Otto's expressionistic studies of cities using cable suspension structures became very well known in the sixties, as did his poetic descriptions of these new environments [fig. 1.11]. Otto was also arguably the most successful of all the utopian designers of the period, from the point of view of works realized. His Olympic structures in Munich (1972) being some of the most famous examples of his built projects.

Günther Günschel, the member whom Friedman remembers being most affected by,[73] was working—not surprisingly—on complex geometric structural systems, and modular building units [fig. 4.36]. In the late fifties, his work was quite varied, and centered on "monkey-saddle" type concrete shell pavilions, geodesic studies, and a prototype system for constructing small cupolas out of tetrahedral panels. Though little remains to give a detailed account of Günschel's ideas, his geodesic studies of the mid sixties indicate a continuing interest in the use of geodesic dome structures, expanded to a large, if not urban scale.[74]

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[72] Ragon, *Prospective et Futurologie*, 327.

[73] Interview with Friedman April 2, 2002.

[74] Very little is written about Günschel, and most of the extant sources are journalistic "round-up" pieces like *L'architecture d'aujourd'hui*'s "Jeunes architectes en Allemagne," that included Günschel: "Günther Günschel," *L'architecture d'aujourd'hui* 28 (September, 1957): 50-51. See also "Geodesic Variations," *Architectural Design* 35 (July, 1965): 345.

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Werner Ruhnau gained more recognition during this period from his collaboration with the painter Yves Klein, than his simultaneous association with the GEAM. Together, Klein and Ruhnau formulated a (loose) program for an immaterial architecture that consisted of a very simple city, whose industrial and residential halves were bifurcated by a large freeway, and whose "architecture" consisted in little more than a vast canopy of conditioned air.[75] No doubt, the idea of water fountains and fire fountains dotting this landscape was Klein's, as they reflected his cosmic/elemental thought. This "aerial city" also called for glass floors and walls, and new notions of personal privacy and social intimacy, i.e., inhabitants would always be naked, etc.. While this experiment hardly had a great impact on architectural culture in the sixties, it is nonetheless interesting to see Klein's aesthetic theories as one of the sources for the recurring theme of immateriality in Spatial Urbanism.[76] This implicit connection between abstract art and architecture was certainly not lost on Ragon.

Despite the potentially rich discourse that could have been produced by all of these personalities, Friedman recalls that he took the most initiative in generating new ideas and giving them systematic formulation.[77] There is no doubt that he was the "leader" of the GEAM, and its most productive and visionary participant. It is possible to speculate on how he may have incorporated the ideas of his colleagues (such as large

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[75] Werner Ruhnau and Yves Klein, "Project for an Aerial Architecture," in Conrads, *Programs and Manifestoes*, 171. This was originally published in the German review *Zero* 3 (n.d.).

[76] See Ragon, *Où vivrons-nous demain?*, 185-190. Ragon here connects the Klein/Ruhnau project to Schöffer's *Maison à cloisons invisibles*.

[77] Interview with Friedman, April 2, 2002.

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open areas of climatized space, etc.), but I would prefer here to concentrate on the few extant collective statements that were issued.

One of the most complete and systematic of GEAM's statements was issued in 1960, after a meeting in Paris:

> A. Existing constructions are not adapted to contemporary life. The increase or decrease of populations is not taken into account. Nor is the extraordinary increase in the rate of circulation. The laws and *rapports* of property ownership are out-dated and rigid. The price of building is too high. Methods of urban planification do not respond to the rapid increase in knowledge and technology.
> B. All of these observations explain the dis-equilibrium of modern urban life: congested circulation, shortage of apartments and the failure of existing apartments to adapt to the needs of families; urban exodus on the weekends; isolation of a great number of inhabitants of the city.
> C. GEAM proposes: the reform of property laws to attain the greatest facility of exchange, of the property as much as its usage; the increasing use of variable and interchangeable constructions; the possibility for the inhabitants to participate in a personal manner in the formation of the habitable spaces that can adapt themselves to any individual need; prefabrication and industrialization to maintain low prices; the densest possible structure of different parts of the city, comprising dwellings, places of work, and sport and culture.
> D. To realize these propositions, GEAM will devote itself to the study of the following techniques:
> 1. Construction of elements of habitation that are variable and interchangeable, including the mobility of exterior façades, interior walls, floors and ceilings.
> 2. The possibility of evolutivity of supply networks for energy, water, and waste disposal.
> 3. The development of *unites d'habitation* of sufficient size and significance to constitute cities in and of themselves: buildings in the form of bridges; interchangeable containers [that] can circulate, fly, float; floating buildings; climatization of large spaces. [78]

This reads like a summary of Friedman's concerns for the next decade. His influence on the text is apparent in the insistence on user participation, while less significant features, such as the provision for floating cities can be traced to Maymont. Further, the structures

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[78] Yona Friedman, David Georges Emmerich, et al., untitled document quoted in Ragon, *Prospective et Futurologie*, 327, 329.

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that are described, though not described explicitly as such, were certain to be space frames of one sort or another.

This became even more apparent on the occasion of a traveling exhibition of the works of GEAM members that began in 1961.[79] Here, theories of mobility must have seemed inextricably linked to the space frame structures of Schulze-Fielitz, the tensegrity models of Emmerich, etc. In his introduction to the catalogue, Günther Kühne underlined the theoretical concerns:

> The social transformation of cities requires a radical revision of techniques of urbanism and construction; the growing terrestrial population requires an extraordinary rhythm of construction; transformations in technology (circulation, telecommunication, production, etc.) lead to unforeseeable exigencies. GEAM carries out research on the adaptation of techniques of habitation to this situation: to render cities and dwellings elastic, mobile. Like all research, the routes followed vary, but the goal is the same: to alleviate the current rigidity of urban life via the intervention of more appropriate techniques of habitat.[80]

As Kühne implies, not all the members of GEAM were utilizing space frames, or were interested in space frame technology for the same reasons. As we have seen, Maymont was interested in the idea of mobility via flotation, and Ruhnau was engaged with the idea of immateriality in the broadest sense. It is therefore important to point out that the compatibility of the space frame with theories of mobility at this moment was not a strictly determined one. In other words, the use of space frames was a choice—as much stylistic as technological.

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[79] The exhibition was organized by Friedman, and the catalogue was edited by Günschel, and the displays traveled to Paris, Hanover, Berlin, Warsaw, and London, among other European cities. Ragon gives these details and reproduces the catalogue in its (textual) entirety: Ragon, *Prospective et Futurologie*: pp. 330-332.

[80] Günther Kühne, "L'architecture mobile," in privately printed exhibition catalogue, circa 1961, translated from the German into French and quoted in Ragon, *Prospective et Futurologie*, 330.

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Friedman had been fascinated by space frame technology even before he immigrated to France. He recalls meeting Konrad Wachsmann in Israel, for instance, and being influenced by his work.[81] However, it seems clear that the merging of the idea of mobility and the use of space frames was reinforced by his participation in the discourse of the GEAM. The sophisticated designs of Emmerich and Schulze-Fielitz pointed to an incredible potential for new technical solutions to the idea of the three-dimensional city into which Friedman could incorporate his ideas about transformability. But as we have seen with the development of his projects for Paris, Friedman's interest in and engagement with actual building technologies (and therefore the space frame) became secondary during the sixties, and he soon lost all interest in the physical form his cities might assume, turning instead to the systems of communication and the group dynamics they would contain.

Friedman's *Architecture Mobile*

The GEAM effectively dissolved in 1962 because, according to Friedman, the other members were not developing their own ideas actively enough.[82] It was also during this time that Friedman's own interest in information theory and group dynamics was growing. Friedman would go on to develop the theoretical aspects of the discourse on mobility and transformability much more so than any of his contemporaries. The main goal of all of his theories was to extract the maximum amount of flexibility from a

[81] Interview with Friedman, April 2, 2002.

[82] Interview with Friedman, April 2, 2002.

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minimal structure, or the most fundamental law or concept, or what he called axiomatic.[83] We have already noted that Friedman's interest in the technical aspects of the physical infrastructure of built works was waning, in direct proportion to his growing interest in these more conceptual aspects of urbanism. However, it remains clear that this basic premise of maximum mobility/minimal infrastructure was in part derived from technical studies of the standardization, prefabrication, and the morphology of space frames.

But, the notion of a "mobile architecture" was much more than a call for physical transformability. Friedman considered it to be a social and psychological imperative—a will to change that would affect, not only architecture, but ultimately social institutions as well. Urbanism, for Friedman, was a matter of providing a maximum amount of liberty for the inhabitants in a stable infrastructure. This included limiting the size of the agglomeration (and its population), so that overcrowding would not hamper movement. And, ultimately, Friedman's theories meant eliminating the architect from the process of environmental design. According to Friedman, the architect's function would evolve into that of designing infrastructures alone, and the inhabitants would adopt the traditional role of the architect as form-giver.[84]

For Friedman, the mobility of architecture was only the most overt and surface manifestation of a universe of change. The currents of transformation were everywhere, and affected people at every conceivable level—biological, psychological, social, and

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[83] Friedman, *L'architecture mobile*, 10.

[84] Friedman's ideas regarding the role of the architect, etc., are given in similar forms in many sources. For this discussion, I have relied, except where otherwise noted, on Yona Friedman, *L'architecture mobile* (Paris: Castermann, 1970), and Yona Friedman, *Vers une architecture scientifique* (Paris: Pierre Belfond, 1974), trans. Cynthia Lang as *Towards a Scientific Architecture* (Cambridge, MIT Press, 1975). Both of these texts are compendiums of sorts of Friedman's ideas.

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technological. Change was ubiquitous, and was found in the will of individuals to express themselves, and from unforeseen upheavals in the outside world. In the end, for Friedman, urbanism could only respond to this incredible uncertainty by establishing an infrastructure that could accommodate change, both quantitative and qualitative. In establishing these propositions, Friedman elaborated a great many theories that purported to explain the historical and biological causes for the contemporary state of the modern world, and that proposed more efficacious solutions to its problems. I want to present the briefest possible summary of these concerns here, in order to establish the broad base and far-reaching ramifications of the rather abbreviated set of ideas and projects for which Friedman has come to be known.[85]

To begin with, Friedman considered the human being to be hard-wired for transformation: "The human cerebral mechanism does not allow for the perception of a stationary or uniform phenomenon or object. All perception fundamentally implies a change in quality (a difference) between one or several components of the phenomena or object observed and other objects or phenomena (for example: differences in movement, color, temperature, etc.).[86] Thus, at the most fundamental level, for Friedman, we can only perceive and/or experience things in a state of transformation or shifting

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[85] Although his name is quite famous, and his projects remain a kind of symbol of the concerns of the sixties, there is no comprehensive study of Friedman's work. Besides a handful of translations and reprints, the vast majority of his essays remains obscure, and even the recent exhibition catalogue that presents his architectural projects so fully, does not attempt an in-depth analysis of his work. See Aline Lebesque and Helene Fentener van Vlissingen, eds., *Yona Friedman: Structures Serving the Unpredictable* (Rotterdam: NAi Publishers, 1999). This exhibition and the accompanying catalogue seem to stress the visual and poetic aspects of Friedman's work, to the detriment of any kind of rigorous historical analysis.

[86] Friedman, *L'architecture mobile*, 19.

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comparisons. This idea is ultimately derived from Gestalt psychology, but was also being discussed in the fifties and sixties by Gyorgy Kepes in the United States, who applied Gestalt principles to artistic *perception*, but did not, like Friedman, want to apply these principles of transformation to the environment writ large.

Beyond the biological component, humans tend to live communally in groups, within which they achieve certain types and degrees of mobility. Unlike animals, according to Friedman, who also form groups, human behavior obeys laws and regulations that are subject to change—either from internal initiative or external forces.[87] It is within the social group that change became a major concern for Friedman. For him, society was characterized by the interplay of individual liberty and external structuring forces. These forces could be legal institutions, or technological change.

Predictably, for Friedman, modern society was characterized by an overabundance of limiting forces and a proportionate lack of liberty. People were limited by their social and physical environment, which refused to yield to their desires. The results were alienation, boredom, and social unrest. But redressing this state of imbalance was a difficult issue, given the uncertainty of future conditions. What seemed like a good solution at a given moment might soon be rendered ineffective by various historical or technological changes. Thus, for Friedman, the question became: how far is it possible to design systems that can adapt to unforeseen future conditions and needs?

Friedman's answers went well beyond the architectural realm. Just as many designers had foreseen planned obsolescence as part of environmental design, Friedman posited the same system of periodic renewal for every social institution and legal

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[87] Friedman, *L'architecture mobile*, 23-24.

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organization.[88] He maintained that through constant, scheduled renewal of laws, contracts, economies, property ownership, etc., these social structures could remain in closer contact with the changing social situation at any given moment in time. Friedman rejected the notion of metaphysical idea of immutable, eternal values (God-given values) forming the basis for social laws, and this idea of periodic renewal was a way to constantly have consensus about the structures that governed "everyday life," a phrase often invoked by Friedman.

Clearly, Friedman's iconoclasm and techno-optimism had many sources. He was interested in information theory and cybernetics, the sociology of leisure and games *à la* Johan Huizinga and Roger Caillois (see below), theories of biological systems, mathematics and game theory, and statistics and demographics.[89] Also, it is difficult not to see the correlation between his notion of structure and liberty and Lefebvre's urban ideas about "appropriation." It is clear that both Lefebvre and Friedman saw society in the most general sense as the dialectical interplay between individual freedom and institutional constraint. However, the critical content that Lefebvre saw as the *raison d'être* of this ongoing struggle was absent from Friedman's formulations. Where Lefebvre saw class struggle, Friedman simply saw the need for more urban equilibrium via better structures. However, we should not underestimate Lefebvre's role in the most general sense in turning many peoples' attention (including Friedman's) to the new epistemological category of "the everyday."

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[88] Friedman, *L'architecture mobile*, 21-23.

[89] One important essay that treats many of these diverse concerns is: Yona Friedman, "La théorie des systèmes compréhensibles: une proposition," *Les cahiers d'étude sociétés industrielles et de l'automation*, no. 6 (1964): 167-197.

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One indication of this was Friedman's growing interest in the ways in which social groups ordered themselves, and could be configured. Social hierarchies, and the types of behavior demanded by them became one of the main foundations of Friedman's urban and social theories.[90] Like his other analyses of various systems, Friedman saw in existing conditions too much hierarchy and constriction. To combat this, he sought the most level, democratic modes of human interaction. These were incorporated into his adherence to the notion of critical group size—that a population could not exceed certain limits, without sacrificing individual liberty. Henceforth, he argued for small social groups as the basis for new urban agglomerations and new social structures. When considered in tandem with his notions of limited property ownership, Friedman's social theory moved towards his notion of a "poor world" in which minimal possessions and small communities maximized social freedom.[91] The sum of these concerns, the details of which would take far too long to recount here, reflected Friedman's desire for a totally democratic society, in which technology, and more specifically, urban planning could facilitate individual expression and freedom.

Friedman was so concerned with the ability of the individual to act autonomously in the social context, that much of his energies were devoted to didactic ends. Friedman's real pedagogical activities, especially in the United States, were undeniably important, and influenced a great many young architects. But, even more generally, Friedman wanted to reach a general public, and to convey to them, in the simplest

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[90] The major work to detail these concerns is: Yona Friedman, *Comment vivre entre les autres sans être chef et sans être esclave* (Paris: Jean-Jacques Pauvert, 1974).

[91] These ideas were collected in Yona Friedman, *Utopias réalisables* (Paris, 1974; new edition cited: Paris: L'Éclat, 2000).

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possible means the axioms of his theories of mobility and urbanism. Towards this end, he developed a highly schematic style of drawing, including stick figures, two-dimensional houses and cars, and cartoon-like word bubbles emanating from his abstracted people [fig. 4.37]. These ideograms would be enhanced by simple text labels, and lines and arrows indicating movement, communication, or other actions. Using this simplified visual language, Friedman hoped to distill the complexities of mathematical and social theory to their most basic expressions, in order to convey their relevance to the current inhabitants of the city. The style of these drawings also reflected Friedman's interest in illustration, and his work on animated films in the late fifties and beyond. Although these drawings are incredibly naïve, they nonetheless demonstrate Friedman's constant concern with reducing complex phenomena to their most simple postulates.

The city was perhaps the most important complex phenomenon to which Friedman devoted his energies. Here, too, he saw a contemporary society in a state of imbalance. Architectural and urban structures were far too rigid to allow for necessary changes and other accommodations. This inflexibility was manifest in the constricted movements of the population, as well as in the inability of architectural structures to adapt to new conditions. Thus, a new, mobile architecture would have to respond to both of these imperatives: the will of the inhabitants, and the demands of changing external conditions.

For Friedman , the main obstacle to flexible urban structures was the existence of solid, ground-occupying foundations.[92] These outdated structures, with their basements and structural walls made rebuilding difficult, even when they were demolished, because

[92] Friedman, *L'architecture mobile*, 25-27.

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the footprints continued to be a form of constriction. They also irreversibly fixed the position of the other infrastructural systems, such as plumbing and electricity. On a larger scale, the existence of city blocks also dictated simple dispersion, or vertical building as the only options for expansion. Mobile Architecture and Urbanism were posited as realistic remedies to this situation.

As with his other concepts, Friedman elaborated his notion of mobility in architecture with an over-abundance of obscure terminology and neologisms. In the late 1950s, Friedman established all of the pertinent terms, methods and devices that constituted Mobile Architecture into a "Lexicon."[93] We have already encountered many of the terms found in this lexicon in the above discussions of Friedman's urban ideas as applied to the Spatial City, and his plan for Paris, such as "spatial urbanism," and "spatial infrastructure." Other terms from this list deserve mention here:

> Mobility: transformations in society and everyday life are unforeseeable for a period comparable to that of the existence of the average building. New buildings and cities must be easily adjustable according to the will of the future society that will utilize them: they must allow all transformations, without requiring a total demolition.
> This is the principle of mobility, a term that I have chosen only after some hesitation, and having failed to find a more exact qualifier.[...]
> Infrastructure: technical elements of a city which are necessary for everyday life, without being utilized directly by the inhabitants; for example the plumbing network, systems of circulation, support structures. The inhabitant only uses those devices that are *plugged into* these networks, such as: electronic devices, sanitary devices, care, or even elements of partition and isolation, such as walls, floors, etc..
> The application of the principle of mobility requires the rigidity of the infrastructure (the neutral elements) and the detachability of the devices plugged into the infrastructure.
> Axiomatic: The system reduced to concepts. The variations of these concepts can describe objects or complicated systems. Therefore, an axiomatic is essentially a practical method for "abbreviation."

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[93] Friedman, *L'architecture mobile*, 9-11. Friedman dated this lexicon to 1957-58, but it is unclear if he compiled them into a clear listing such as this at that time, or later.

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> The city, in that it is an organization, can be defined by axiomatic; the only terms utilized are: space, the group of cohabitation, and the distribution of elements of comfort ([these are] the axiomatic domains).[...]
> Ideal Infrastructure: an infrastructure that can adapt to any urban "organization-type." Indeterminate urbanism bases itself on "ideal" infrastructures. These can be linear, planar, or spatial.[...][94]

It is easy to see the appeal these theories would have had for students and architects during the sixties. Friedman made it seem as though his ideas were already partially realized in the form of various technical infrastructures (water and electricity), and that it was absurd for buildings not to follow their "plug-n-play" logic. For Friedman, a wall or floor was soon going to be the equivalent of an electric razor—bought at a store from a large selection of similar items, and then utilized at home thanks to an ("ideal") infrastructure.

As we have seen, more often than not, this infrastructure would take on the physical form of a giant space frame, suspended over the ground or existing city. These "bridge cities" (*ville-ponts*) were envisioned by Friedman as massive climatized spaces, with public and private functions, as well as circulation, etc.. The space frame proved convenient, because it could technically accommodate the modular components of the new habitat—floors, roofs, walls, and furniture. It could also disseminate the "ideal infrastructure"—the set of conceptual axioms governing the environment—in a spatially homogenous manner. It could, in short, be a neutral system of connection and support.

It is easy to contextualize Friedman's concerns—he, like so many others, was troubled by demographic trends, and hopeful about technological progress.[95] For him,

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[94] Friedman, *L'architecture mobile*, 9-11.

[95] For a survey of concerns regarding population increase, and how they affected the megastructure movement, see Sarah Deyong, "Planetary Habitat: The Origins of a Phantom Movement," *The Journal of Architecture* 6, no. 2 (Summer, 2001): 113-128. Deyong relates

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technology was a way to provide people with their basic material needs, and the means towards personal liberty. Architects and planners were to provide infrastructure, and the inhabitants would do the rest. This is where Friedman's work began to depart from that of his contemporaries, like those other proponents of "plug-in" cities, Archigram. He stopped short of envisioning the specifics of the new lifestyles that might be engendered by the ideal infrastructure, because this was the concern of the future inhabitants. Instead, he focused on the infrastructure itself—first, its physical existence, and then the rules governing its manipulation.

Very early on, Friedman realized that one result of the adoption of his theories would be the elimination of the traditional role of the architect.[96] In designing for the masses, the old model of the client/architect relationship was no longer pertinent, because there was no way for the architect to accommodate the desires and needs of everyone in a new housing development, for instance. One of the reasons the *grands ensembles* had failed, according to Friedman, was that they imposed a uniform solution onto a diversity of needs and preferences. Obviously, the program of mobile urbanism would approach the problem differently, by providing a basic infrastructure that could accommodate a large number of different solutions and changing conditions.

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these ideas to Friedman and the GEAM, but she mistakenly describes Ragon's GIAP as a re-organization of the GEAM, p. 122. This mistake persists in Deyong's more recent "Memories of the Urban Future: The Rise and Fall of the Megastructure," in *The Changing of the Avant-garde*, 23-26.

[96] Friedman, *Towards a Scientific Architecture* is largely an elaboration of this core idea.

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Everyday Nomads

The man of the future might well be able to reconcile those two antagonistic forces, which have split his most distant ancestors: sedentary immobility, constructor of cities, and nomadism, destroyer of civilizations.
Michel Ragon[97]

L'homme se défixera.
Ionel Schein[98]

The inhabitant of the city is nomadic by nature.
Raymond Lopez[99]

Most serious thought in our time struggles with the feeling of homelessness.
Susan Sontag[100]

The wandering of nomads is a merely formal one, because it is limited to uniform spaces.
Guy Debord quoting G.W.F. Hegel[101]

They would be sitting across from each other, they would be about to eat after having been hungry, and all these things—the coarse white linen tablecloth, the touch of blue of a package of Gitanes, the porcelain plates, the somewhat heavy silverware, the footed glasses, the wicker basket full of fresh bread—composed the frame, never twice the same, of an almost visceral pleasure, bordering on numbness: the impression—almost exactly contrary to and almost exactly the same as that produced by speed—of a marvelous stability, a marvelous plenitude.
Georges Perec[102]

Seen against the backdrop of cultural and architectural discourses in the 1960s, Friedman's Mobile Architecture, despite its detailed elaboration and global implications, seems like one symptom among many others of an international concern with movement,

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[97] Ragon, *Où vivrons-nous demain?*, 23.

[98] Quoted by Marie-Ange Brayer, "La villes des cartes habitées," online document: http://www.frac-centre.asso.fr/public/collecti/textes/crit01fr.htm

[99] Lopez, *L'avenir des villes*, 67.

[100] Susan Sontag, "The Anthropologist as Hero," in *Against Interpretation.* (New York: Anchor Books, 1990): 69.

[101] *Society of the Spectacle.* Trans. Donald Nicholson Smith. (New York: Zone Books, 1994): 93.

[102] Perec, *Things*, 52-53.

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displacement, indeterminate territoriality, and other types of modern nomadism. The question that seemed to haunt the avant-garde (and many others during the sixties) was if this state was a condition or a remedy. Was man being liberated or merely displaced? The answer seemed to be both. To continue Sontag's passage of 1963 from above: "The felt unreliability of human experience brought about by the inhuman acceleration of historical change has led every sensitive modern mind to the recording of some kind of nausea, of intellectual vertigo. And the only way to cure this spiritual nausea seems to be, at least initially, to exacerbate it."[103]

It would seem helpful to discuss a few of the various ways in which this condition was "exacerbated" during the sixties in France—ways that went beyond the Spatial Urban demand for the integration of change into the urban infrastructure. Certainly, the most famous response to these issues (even more so than Friedman's) was that of the Dutch painter Constant, whose *New Babylon* took on totemic significance, and is currently experiencing a revival. The ways in which this legendary agglomeration of models, drawings and texts were incorporated into Situationist theories of play, drift, and the construction of "situations," has been recounted at great length in sources cited above. Likewise, the modernist fascination with nomadism in the context of architectural production has been discussed.[104]

However, the doom and gloom "center cannot hold" outlook of the avant-garde was always being tempered by various cultural forces. In France, change and movement

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[103] Sontag, *Against Interpretation*, 69.

[104] See, for instance, Felicity Scott, "Bernard Rudofsky: Allegories of Nomadism and Dwelling," in Sarah Williams Goldhagen and Réjean Legault, eds., *Anxious Modernisms* (Cambridge and Montréal: MIT Press and CCA, 2000), 215 – 237.

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were not being experienced as totally violent and disruptive forces, but were quickly being integrated into the ever-developing consumer society. The Spatial Urbanists recognized this much more clearly than their contemporaries, and sought to produce designs that were adequate to the new culture of nomadism. The results were Friedman's Mobile Architecture, and other experiments in radically displaceable dwelling units, such as Guy Rottier's *Maison de vacances volante* (1964) [fig. 4.38], which was essentially a helicopter with expanded living quarters. We would also include here Schein's plastic cabins and housing units, and all of the other "cell" type dwellings that were in vogue at the time [fig. 4.39].

But, in a more general sense, the entire discourse regarding the importance of leisure, games, and the ludic that is apparent in architecture during the sixties, was in large part inspired by contemporaneous economic and social developments. The *trente glorieuse* was a period of intensive movement in several senses (not just the avant-garde conception). The migration towards urban centers, the development of mass transit, and the proliferation of the individually-owned automobile were all intimately connected to the post-war economic boom, and likewise to the urban discourse (both utopian and pragmatic). Simultaneously, the possible effects of the impact of technology on labor led to much speculation about the rise of leisure time among all social classes. Mobility, leisure, and play became defining themes as a result of these new conditions.

Perhaps the most important single text in this regard is the Dutch historian, Johan Huizinga's *Homo Ludens* of 1938.[105] For Huizinga, play was a primary social function.

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[105] Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture* (London: Temple Smith, 1970).

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It was a closed, irrational activity whose "performance [was] its own end."[106] "[Play] is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner."[107] Play is an absolute inversion of technique that takes place in a segregated, quasi-sacred space, adhering to its own set of arbitrary, yet highly determinate rules. Although separate and irreducible, the play impulse could be located in many non-game cultural activities, such as business, language, law, and even war. But Huizinga was quick to point out that as soon as the play impulse was too stringently institutionalized (as in organized sporting events or Bridge) or turned towards pragmatic ends (as in business), its essential qualities were lost. Indeed, the final chapter of Huizinga's text constitutes something of a critique of industrial and post-industrial society, which he charges with the over-instrumentalization of play activities, and with the suppressing of the play-qualities that were once an aspect of disparate activities such as, for instance, science. In the latter case, the classical penchant for circumscribed systems and etymologies in science was largely replaced by empiricism and calculation, thus instrumentalizing a previously more closed and "capricious" form of activity.[108]

It is apparent that many architects and artists were influenced by *Homo Ludens*, though it is not always clear exactly which lessons they took from it, and how these were incorporated into their designs. However, Huizinga's key assertion that "play" was a primary "social function" that was irreducible to objective or functional analysis must

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[106]Huizinga, *Homo Ludens*, 230.

[107] Huizinga, *Homo Ludens*, 32.

[108]Huizinga, *Homo Ludens*, 230.

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have seemed a compelling postulate for those attempting to critique utilitarian functionalism after the second World War. Additionally, the requirement that play subvert the profit value of a given activity helped certain postwar avant-gardes to actively engage technology and capitalism by extracting its play elements, as opposed to simply rejecting it altogether. Such was certainly the case with that most famous of ludic projects, Constant's *New Babylon*, and the Situationist critiques out of which it grew in the late fifties.[109]

Equally if not more important in the French context was the work of the philosopher and sociologist, Roger Caillois, whose *Les jeux et les hommes* (1958) had a significant influence.[110] Caillois's work grew largely out of a critique of Huizinga's, which he faulted for not systematically identifying the different types of play activity in society. Since, as Caillois contended, Huizinga was only interested in the play elements of various cultural activities, he did not see a need for rigorous description and classification of games themselves. Further, Huizinga's insistence that there could be no material interest in play activities rung hollow with Caillois, who sought to account for the importance of gambling as both a play and a profit activity.[111] In brief, Caillois's analysis places just as much if not more emphasis on the *rules* of games, as on the liberating value of the "fun" they induce. Like Huizinga, Caillois recognized the ideal

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[109] For the connection between Huizinga's work, and the Situationists see Sadler, *Situationist City*, 34-36. Marcel Mauss's essay on "The Gift" (1925) was also influential in this regard.

[110] Roger Caillois, *Les jeux et les hommes* (Paris: Gallimard, 1958), translated as *Man, Play and Games*, trans. Meyer Barash (Glencoe: Free Press of Glencoe, 1961; edition cited, Chicago, University of Illinois Press, 2001).

[111] Caillois, *Man, Play and Games*, 5-6.

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realm created in the act of play. The game takes place in a privileged and arbitrary time and space. "In every case, the game's domain is therefore a restricted, closed, protected universe: a pure space."[112]

In effect, the distinction between Huizinga's work and Caillois's is analogous to that between Constant's and Friedman's: the former in both instances is more interested in the eruption of play value in unexpected places, and the latter is more interested in the protected and highly regulated space of play itself. Friedman was fascinated by the very idea of an infrastructure of minimal constraint and maximum freedom, but he understood this freedom as a phenomenon made possible by the regulated space of the minimal infrastructure. From this perspective, the fascination with topology is given another dimension—the idea of a morphologically malleable space that nonetheless operates according to a set of rules must have seemed like the perfect way to fully exploit the dialectic of structure and play.

Caillois was more interested in the sociological and economic motivations for play than Huizinga. As such, his text rests quite comfortably in the discourse on leisure that was developing during the fifties and sixties, and even earlier, in France. Certainly, an integral aspect of Prospective thought was the possible impact of technology on everyday life. Speculation about the increase of leisure time that might result from automation and other time-saving developments was directly related to the increased interest in leisure and non-work activities. Perhaps the key figure in these studies was Jean Fourastié. Fourastié was an economist who became known for incorporating subtle, qualitative, sociological considerations into his research. He was greatly concerned with

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[112] Caillois, *Man, Play and Games*, 7.

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the concept of the "quality" or standard of living, and with the economic and social consequences of "technological progress." For Fourastié, technological progress had great potential for social development, specifically in the form of the reduction of time spent working.[113]

One of Fourastié's most influential works was *les 40,000 heures*, which was a sort of Gaullist manifesto that outlined the means to achieve a dramatic reduction of hours spent working over the course of an average lifetime.[114] The first part of the text was devoted to a critique of socialism. In the succeeding chapters, the author contended that in order to achieve the ideal number of 40,000 hours, the average number of years spent working would be reduced from 50 to 33, paid vacation weeks per year would increase from 4 to 12, and hours per week would accordingly drop from 48 to 30. Technological developments would play a key role in this evolution, reducing the number of hours required for specific tasks, etc.. Though this text by Fourastié is late, it is based upon his own ideas form the previous decade, and more generally, the attraction of a shortened work week and heightened leisure or cultural time was a major theme in France from the inter-war period through to the present (the enforcement of the 35 hour work week)

Like so many of his contemporaries, Fourastié was a techno-optimist. But, like the generation of 1936, he was also a nationalist, and believed firmly in the idea of a true French culture. For him, the challenge of new economic and social structures was not

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[113] See Jean Fourastié, *Le grand espoir du xxe siècle* (Paris: PUF, 1958); *Machinisme et bien-être* (Paris: Minuit, ???), translated as *The Causes of Wealth*, trans. Theodore Caplow (Glencoe: Free Press of Glencoe, 1960). Fourastié's *Essais de morale prospective* (Paris: Gontheir, 1966) is another meditation upon the sociological impact of technology that incorporates the notion of the Prospective.

[114] Fourastié, *Les 40,000 heures* (Paris: Denoèl/Gonthier, 1972).

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simply their widespread implementation, but their adaptation to local conditions and traditions. When Fourastié was asked by friend Michel Ragon to join the GIAP, it seemed like a natural alliance. Fourastié acknowledged the need for a technologically progressive method of urban planification, as well as the interdisciplinary nature of its conception.[115] But he rejected the specter of the global, rootless nomad; the lack of a specific, grounded territoriality that was often implied by post-industrial culture. In his preface to Ragon's book, *Les cités de l'avenir*, Fourastié expounded upon the need for new environments realized according to the demands of technological development, but pleaded with the Spatial Urbanists to respect the specifics of locale and culture:

> Of course, my sympathy with Michel Ragon and his friends is self-evident; I am extremely favorable to architecture that is not only modern, but futurist. But, I would ask at the same time, of architects and urbanists, not to construct exactly the same thing in Basel that they would construct in Paris, in Athens, or that they would construct in Chicago.[...] [Architects] must respect the continuity of [a place's] character, they must keep in mind that they are working in a specific place that has its own culture, its own traditions, which have developed, which have existed, at least in Europe, for hundreds, and sometimes thousands of years[...].[116]

Is Fourastié's reticence about globalization here in contradiction with his pro-technology stance? Not necessarily. It is more likely that his belief in a regionally-specific urban modernity is a reflection of values inherited from the French discourse on leisure and technology that can be traced back to 1936, the Popular Front, and the "popular culture" movement that grew out of it.[117] Within this movement, leisure time was a central component in the development of a more highly cultured working class,

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[115] Jean Fourastié, preface to Michel Ragon, *Les cités de l'avenir* (Paris: Editions Planete, 1966), 16-17.

[116] Fourastié, *Les cités de l'avenir*, 17-18.

[117] On the popular culture movement, see Brian Rigby, *Popular Culture in Modern France* (London, New York: Routledge, 1991).

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liberated by automation, and free to pursue self-enriching activities. Of course, an integral assumption in this conception of culture was the qualifier "French," since both before and after the Second World War, France clung tenaciously to its image as center of the cultural universe. Furthermore, the conflation of leisure and culture characteristic of the popular culture movement functioned as one way to maintain national identity in a global culture increasingly dominated by the binary dynamic of the Cold War. As Kristin Ross describes, the imperative "Neither Ford nor Lenin" was one way for French culture to "thread its way between a vision of communist totalitarianism on the one hand and United States economic and cultural imperialism on the other."[118] But technological modernization had to be integrated into this new view of French culture. The role of automation is one obvious way in which this was achieved, but another way was urban development. From the extensive planning and construction of *équipements* or sporting facilities, to the many regional *Maisons de la Culture* built due to initiatives by Malraux's Ministry, it was clear that the city was the epicenter, not only of industrial labor, but of post-industrial leisure (even if leisure demanded an "escape" from the city to the country in the family car).

The cultural gravity of leisure and its modern organization becomes apparent when considering the work of a figure like Joffre Dumazedier, one of the leaders of the popular culture movement, whose writings from the fifties and sixties are the best index of these concerns.[119] Both a sociologist of leisure, and a campaigner for its cultural benefits (if utilized properly), Dumazedier embraced all the aspects of free time as an

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[118] Ross, *Fast Cars, Clean Bodies*, 127.

[119] Rigby, *Popular Culture*, 46-52.

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industrial phenomenon. He also recognized the impact of recent historical developments: "French society seems to have entered in the decade 1955-65 a phase of change in which leisure problems become more and more pressing in relation to all other sectors of social and cultural life. This is no longer a working class demand as in 1936; today leisure as a problem concerns society as a whole and its global culture."[120] But this is not to say that Dumazedier saw no national distinctions in the pursuit of leisure during this period. He was quick to point out the cultural distinctions apparent in like activities, such as TV viewing, in different contexts.[121] Dumazedier also saw the increasing institutionalization of leisure as a positive sign, and applauded local and state initiatives, such as sports stadia and *Maisons de la Culture*.[122] And although it was a relatively minor aspect of his formulation of the cultivating aspects of leisure activities, it is clear that Dumazedier saw modern aesthetics, in art and architecture, as a valuable means to educate the public [fig. 4.40].[123]

Thus, Fourastié's reluctance to concede the particularities of local culture to the utopian city had a basis in the French ideology of leisure. But what other conclusions can be drawn from the obvious parallels between the social concern for the development of

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[120] Joffre Dumazedier, *Sociology of Leisure*, trans. Marea A. McKenzie (Amsterdam: Elsevier, 1974), 63.

[121] He is intent on demonstrating that "[t]he content of French TV programmes has not up to now been flooded by varieties and by commercial advertising, as in the United States where this covers 75% of camera time." Dumazedier, *Sociology of Leisure*, 58.

[122] Dumazedier, *Sociology of Leisure*, 61-62.

[123] See, for example his discussion of Cubism in advertising, and the importance of color and abstraction in Joffre Dumazedier and Aline Ripert, *Le loisir et la ville: loisir et culture* (Paris: Seuil, 1966). It should also be noted that this preference for a modernist, abstract aesthetic is in part a reflection of the Official embrace of modernity as reflected in the taste of André Malraux.

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leisure activities and the utopian architecture of this period? To answer this question it is necessary to address two specific leisure activities in evidence in France at this time: weekend and holiday travel, and the *bricolage* (do-it-yourself) phenomenon. Increasingly, automobile ownership made short trips away from home possible and popular. A revealing literary example of this phenomenon can be found in Christiane Rochefort's *Les petits enfants du siècle*, in which several families take their holiday in the country for "fresh air," and then spend the entire time debating the relative merits of various automobiles, particularly the French-made Citroên 4CV.[124] Weekend and holiday travel were so popular that many families acquired weekend cottages, etc.. According to Dumazedier, by the early seventies there were 900,000 weekend houses in France (a number that would have been greatly increased if less formal structures such as unused farmhouses and fishing huts were taken into account).[125] When the French stayed home, they turned more and more to fix-up projects around the house and other domestic activities such as gardening.[126]

As noted above, the Spatial Urbanists were very much aware of the potential impact of the weekend getaway on the architecture of the future. Ionel Schein's experiments with prefabricated houses were largely aimed at camping activities. Maymont did extensive studies on prefab, stackable housing units for use in holiday applications, and Ragon saw the second, weekend house phenomenon as an expression of

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[124] Rochefort, *Children of Heaven*, 43-50.

[125] Dumazedier, *The Sociology of Leisure*, 56.

[126] Statistics on these activities during the fifties and sixties can be referenced in many sociological and historical sources, but for the sake of continuity, I refer the reader once again to Dumazedier, *The Sociology of Leisure*, 56-57.

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the nomadic aspirations of the tertiary era. Guy Rottier provided some of the most interesting meditations upon the mobile temporary dwelling. Clearly, in all these projects, the potential of technology to facilitate personal movement converged with the social function of leisure as it was then being formulated.

In an analogous fashion, Friedman's development of Mobile Architecture tapped into the national craze for *bricolage*, or the home repair and improvement projects that became popular during the fifties and sixties across Europe.[127] Friedman's insistence that architects step aside and allow the users of urban infrastructures to have absolute and final say in the configuration of their dwellings, was the futuristic extension of *bricolage*. It was also the extension of a distinctly capitalist notion of modification and personalization:

> After all, it was not so long ago that the major automobile makers began to produce "half-finished" cars, so that the client was then free to choose a personalized car starting from a list of several hundred possible permutations: colors, accessories, etc. The same tendency is growing and developing more and more in other domains: travel, the food industry, leisure, etc..[128]

These observations on the connections between the discourse on the culture of leisure and the projects of Spatial Urbanism do not only establish a context of common concerns, but they also help to explain the rejection of these works at the end of the sixties. At the same time that Prospectivists such as Fourastié, Ragon, and Dumazedier were speculating on the benefits of the reduction of time spent working, the critique of the French society of technocrats began to encompass much more than the Marxist analysis of alienated labor. The state organization of leisure time, and what Lefebvre

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[127] See Friedman, *L'architecture mobile*, 33.

[128] See Friedman, *L'architecture mobile*, 33.

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described as controlled consumption,[129] would meet their ultimate rejection in Debord's *Society of the Spectacle*, and the events of May, 1968.

Architecture Principe

Even while the Spatial Urbanists were busying themselves with raising the physical structure of their cities into the realm of dis-embodied movement and information exchange, other avant-gardists in Paris were attempting to block, slow, or at least substantially alter this sublimation. In 1963, the architect Claude Parent, the theorist Paul Virilio, the painter Michel Carrade and the sculptor Morice Lipsi formed the Architecture Principe group.[130] Within 3 years, the group (Carrade and Lipsi's participation was minimal[131]) had a major commission—the quasi-Brutalist *Church of St. Bernadette* in Nevers (1964-1966) [fig. 4.41], and was publishing its own manifesto journal, called *Architecture principe*.[132] The work and theories of the Principe group were obscure, and self-consciously obtuse relative to architectural and urban discourse in the sixties. Deriving from the "architecture sculpture" movement of the fifties (Bloc, et al.) on Parent's side,[133] and a new philosophical notion of phenomenology and space on

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[129] Lefebvre, *Critique of Everyday Life,...*

[130] Thanks to a certain resurgence of interest that took place in the mid-1990s, in the form of the 1996 Venice Architecture Biennale, curated by Architecture Principe's contemporary champion, Frédéric Migayrou, the work of this group is fairly well documented. See: Migayrou, *Bloc: le monolithe fracturé*, and *The Function of the Oblique: the Architecture of Claude Parent and Paul Virilio 1963-1969* (London: AA Publications, 1996).

[131] *Function of the Oblique*, 54.

[132] The journal lasted just a year, from February, 1966 to January, 1967. See the reprint edition: Claude Parent and Paul Virilio, *Architecture principe 1966 et 1996* (Besançon: Éditions de l'Imprimeur, 1996).

[133] Jacques Lucan, Introduction to *Function of the Oblique*, 7-9.

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Virilio's side, the forms and statements of the group were issued in direct opposition to the Spatial Urbanists and other avant-garde designers of the moment.

Parent had been a central figure of the French avant-garde since the early fifties. He had collaborated with painter Yves Klein, with Nicolas Schöffer on the latter's architectural projects as early as 1953, was a close colleague of Ionel Schein, a member of the Groupe Espace, founded by André Bloc (he also designed and built a house for Bloc in Antibes, and collaborated with him on the *Maison d'Iran* at the Cité Universitaire [fig. 1.34]), and was a frequent contributor to *L'architecture d'aujourd'hui*. Parent was also an informal participant in the Spatial Urbanism "movement." In 1960, in collaboration with Lionel Mirabaud, he designed a "conical" city, which eventually came to be called a *Turbosite* [fig. 4.42]. These were essentially a more articulated version of Jonas' *Funnel Cities* (Parent and Mirabaud sometimes called them "shattered funnels") being designed simultaneously, and relied upon the classic modernist devices of a raised megastructure that freed ground space, and provided maximum sun exposure. The cone city would later appear as a *Turbine* in the first issue of *Architecture principe*.[134] But, shortly thereafter, the megastructural and "spatial" work of Parent was displaced by massive, monolithic, almost frightening objects that dominated the landscape, and demonstrated the ideas of his new collaboration with Virilio [fig. 4.43].

When he saw the first issue of *Architecture principe*, Paul Maymont reportedly accosted Parent, telling him: "you're mad Parent. You've gone too far this time."[135] In recounting the story 30 years later, Parent's response was: "this was rich, coming from

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[134] Claude Parent, "Turbines," *Architecture principe*, no. 1 (February, 1966): np.

[135] Parent, *Function of the Oblique*, 54.

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the man who had proposed to put floating cities in the Bay of Tokyo."[136] Without pursuing the question of who was producing the most fanciful work during the sixties, it is clear that the formation of the Principe group formed an official counterpoint to the hegemony (at least in the realm of utopian discourse) of Ragon and Spatial Urbanism in the French context. Parent's official split with Ragon et al. came in the mid-sixties when he submitted a proposal for the re-urbanization of the Avenue Charles de Gaulle, via a large "sloping structure," that was ill-received by his visionary counterparts. After this incident, he refused to join the GIAP.[137] The tension was more than interpersonal. The ideological and aesthetic rifts became apparent in the pages of *Architecture principe* as the sixties progressed:

> But we would like to say to:
>
> - those who have been trying for several years to submit architecture to the ends of industry
> - those who are standardizing
> - those who are demolishing the mass and working furiously against it
> - those who advocate the undiscriminating use of purely mathematical structures which are erected under the guise of 'architecture' [...]
> - those who are so frightened by the responsibilities attendant upon true creativity that they try to be as flexible, mobile, supple, and adaptable as possible, which results in an architecture that is neutral, indeterminate
> - those who are pushing mankind towards NOMADISM [...]
>
> We would like to say, to all those people: we are MOBILIZING, and declaring a state of war.[138]

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[136] Parent, *Function of the Oblique*, 54.

[137] Parent, "Interview with Claude Parent," *Function of the Oblique*, 54

[138] Claude Parent, "L'homme déraciné," *Architecture principe*, no. 3 (April, 1966); trans. Pamela Johnston as "Mankind Uprooted," in *Function of the Oblique*, 69.

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So, in order to "mobilize" against the mobilizers, Parent and Virilio asserted a new conception of architecture and urbanism, one based on architecture's material presence, and its psychosomatic influence on inhabitants. Architecture was to comprise resolutely closed forms—resisting networks, and integration into the landscape, and instead presenting obstacles to this kind of integration, presenting an immovable object that would impose itself on the city, and the perceptions of its users. Parent's earlier works excelled at creating a sense of dis-equilibrium, even psychological discomfort. His collaboration with Virilio seemed to theoretically fortify this position.

It so happened that Parent's notions of architectural autonomy dovetailed with Virilio's obsession with the World War II bunkers of the great defensive walls on the Atlantic coast, and in central Europe, which he had been photographing and studying since the late fifties [fig. 4.44].[139] For Virilio these structures represented perhaps the last tangible architectural masses in a world characterized by non-physical movement, trajectory, and communication exchange. As the world became a dis-embodied network, these stubborn objects remained—closed and mute—slowly eroding and shifting in the sands of French beaches, but never fully disappearing, always standing witness to the lost presence of built form.

Thus it was that the major work of Architecture Principe, a small church in Nevers, took on the rounded, opaque form, and the rough Brutalist surface effects of a military pill box.[140] This obstinate form, with a few punctures in its surface to facilitate

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[139] Virilio first published these images in "Bunker archaeologie," *Architecture principe*, no. 7 (September-October, 1966): entire issue. He later published a book in conjunction with a 1975 exhibition: *Bunker archaeology*, trans. George Collins (Princeton: Princeton Architectural Press, 1994).

[140] Any connection to the British movement Brutalism, however, was unintended,

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minimal illumination was in a sense a manifesto piece against the lightness and mobility that characterized the work of their contemporaries. But, despite its dominating, massive presence, *St Bernadette* was also a manifesto about mobility. In this era, no one could responsibly neglect this theme entirely, and Parent and Virilio dealt with it explicitly, albeit in their own very distinctive way.

Inside the Nevers complex, certain floor surfaces were placed on an incline, as was the main seating area of the nave, etc. [fig. 4.45]. These inclines represented the first real implementation of Architecture Principe's most famous concept: the "function of the oblique" [fig. 4.46], and the closely related concept, "habitable circulation" [fig. 4.47]. The inclined, or oblique plane was the fundamental device of Architecture Principe's understanding of architecture and urbanism. It represented a return to a bodily confrontation with an architecture that confronted the inhabitant with visual opacity and elicited physical effort (combating imbalance, and climbing and descending the inclines). Habitable surfaces would be multiplied by this technique because vertical (uninhabitable) wall surfaces would be eliminated in favor of gradually sloping planes that could be traversed, and rested upon. This was, as Virilio acknowledged, an explicitly phenomenological understanding of the built environment—a return to the body as the focal point of experience. Philosophically, Virilio looked to Maurice Merleau-Ponty for support in articulating this sense of bodily perception and experience.[141] Merleau-Ponty, in "Eye and Mind" one of his most important late essays on aesthetics and perception, had brought his Bergsonian assertions to bear on a critique of crude scientific empiricism,

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[141] Virilio quotes Merleau-Ponty's statement: "It is not the eye which sees [but] the body as a receptive totality," in Virilio, "Architecture Principe," *Function of the Oblique*, 13.

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and asserted instead a shifting, subjective, and bodily model of human perception.[142] In a sense, oblique design was the exact architectural equivalent of this position: it viewed current "scientific" approaches to architecture and urbanism as substituting limited notions of structure and system in place of "true" spatial experience.

But the dominance of circulation was unavoidable, and instead of combating it, Architecture Principe chose rather to activate it phenomenologically by making it "habitable:"

> In a world in which everything is transformed—the element into energy, the point into route—it is no longer feasible to separate habitation from circulation. From now on, there will be a confrontation between two fundamental forces: 'MOBILE ARCHITECTURE' and 'HABITABLE CIRCULATION.'
>
> The first of these, while opportunistically incorporating the word 'architecture,' in fact shares the same aims of industry—and consequently its methods and effects. The second, though it perhaps seems a contradiction in terms, simply returns to the roots of architecture to find a solution to the problems of fluidity.[143]

"Habitable circulation" was the end result of the function of the oblique. It was architecture's final answer to a world in a state of motion—a population in a state of perpetual movement and imbalance. Oblique surfaces would be used to make normally-stationary people kinetic. But this movement, as we have seen was not nomadic in the modernist sense of the term, but was rather bodily and engaged, thanks to the physicality of the architecture in which humanity would dwell.

But were these developments topological? On occasion Virilio, particularly, invoked the term, and later used it to describe the entire enterprise of oblique

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[142] Maurice Merleau-Ponty, "Eye and Mind," Trans. Carleton Dallery, in *The Primacy of Perception* (Minneapolis: Northwestern UP, 1964), 159-190.

[143] Paul Virilio "Circulation habitable," *Architecture principe*, no. 3 (April 1966); "Habitable Circulation" in *Function of the Oblique*, 67.

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architecture.[144] During the sixties, he seemed to understand in much the same way as his antagonized utopian counterparts—as a way to expand the urban structure spatially. Topology seems to have been the physical implementation of the oblique; it was a way of exploiting all three dimensions, without reverting to simple rectilinear stacking. The "habitable circulation" of the oblique would extend itself into the sky in way that maximized spatial occupation, and opened up the potential of the city to its inhabitants: "At a time when physical constraints are multiplying, when alienation has become commonplace, we must, for the sake of society use the incline, the curve, and topological, or rather TOPOTONIC means to exploit the full potential of space"[145] [fig. 4.48]. Thus Virilio turned topology, the geometry of surfaces into the stretching, or extension of surfaces (topotonic). Despite Virilio's (continuing) penchant for neologism, we find Architecture Principe's understanding of the spatial extension of surface to be nearer the Spatial Urbanists than they might have wanted to acknowledge.

It is clear, even from this very brief summary of their challenge to Spatial Urbanism, that the position of Architecture Principe was plagued by some fundamental problems. My purpose here is neither to exploit nor defend these weaknesses, but rather to show that there was in fact a counterposition to the dominant French avant-garde in the sixties. This counterposition, however, still found itself engaged with the major themes of the period: displacement and structural disembodiment. Phenomenology must have seemed like a tenable way with which to combat the entropic forces of technology, even while maintaining the primacy of architecture (and the architect). Architecture Principe

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[144] Virilio, "Architecture Principe," *Function of the Oblique*, 11-13.

[145] Paul Virilio, "La cité médiate," *Architecture principe*, no. 6 (August, 1966): np; *Function of the Oblique*, 71.

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drew from aesthetics, philosophy, and "direct" spatial experience to combat these forces, but in the end, their theories failed to convince. It is somehow appropriate that ideology, with which they dealt only "obliquely" before 1968 would signal Parent and Virilio's divergence—Virilio participated in the demonstrations with students, while Parent conscientiously abstained. In fact, their last project, which was never inaugurated, was an experiment in oblique habitation to be carried out in May of 1968 at the University of Paris at Nanterre.

Charettes!

It is easier to conjure away the car than a building.
D.G. Emmerich[146]

Of all the symptoms of the ills of urban existence, in France and elsewhere, there was perhaps no greater image, no symbol that elicited stronger reactions than the automobile. The car was the commodity fetish *par excellence*, and the literal destroyer of the urban fabric, but it was also one of the main sources of modern mobility. Nonetheless, the architect's hatred of this machine maintained a proportional, but inverse relation to consumer society's enthusiastic embrace of it. The culture of the car developed incredibly rapidly in postwar France, fueling not only a huge industry, through makers like Renault and Citroên, but also a huge myth, inspired largely by American movies.[147] We have already seen that, at the base of most urban design during this period

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[146] David Georges Emmerich, "Deltamobiles into houses," *Architectural Design* 36, no. 8 (August, 1966): 412-413.

[147] See Ross, *Fast Cars, Clean Bodies*, 15-70.

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lay a distinct reaction to the automobile, and its infrastructural requirements. The expansion of roads was the most remarkable and controversial feature of Delouvrier's *Schéma*, and as Lavedan has stated, the Parisian urban landscape changed so radically during the postwar period because of the administration's willingness to concede habitable space to circulation (see Chapter 3).

It would not be an exaggeration to say that the entire phenomenon of Spatial Urbanism was in some senses a reaction to the automobile. Along with the re-integration of the urban functions, the segregation of traffic flows was of the greatest importance in almost every Spatial city project, and alternatives to private, individual locomotion were constantly being sought. Ragon's hatred of the car was visceral, and belied a certain nostalgia on his part for the Paris of the *grandes promenades* (which was shared by many Spatial projects). One gets a sense of this impulse toward segregation when visiting the *Front de Seine* (much more so than at *La Defense*, where the cars are further removed from the suspended walkways). One glimpses the cars, passing in their own humming arteries beneath the ground, through holes formed by footbridges, and disparities in the heights of platforms. They can be heard sometimes, distantly, and if one walks far enough east in the complex, you arrive at the entry to the underground parking. In this sense, Spatial Urbanism was about the literal sublimation, the raising of the city above the filth and danger represented by the car.

All architects shared this hatred of the automobile. They had, of course, always been wary of its presence, and jealous of its industry, of its unhindered functionalism (Le Corbusier's Parthenon/Delage comparison in *Vers un architecture*). It would be difficult to count the times that architects who supported prefabrication techniques bemoaned the

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superior organization and resources of the automobile industry. Only on rare occasions do we find exceptions to this rule, like the Smithsons' fascination with cities as seen from their car, while passing by at high speeds, or Venturi and Scott Brown's celebration of the Las Vegas Strip. And there are those famous architect-designed cars, Gropius' *Adler Cabriolet* (1930) and Fuller's *Dymaxion* (1933).[148]

French avant-garde designers added some less commendable projects to this list. All of these, in their own distinct way, are symptomatic of the profound ambivalence toward the automobile during this period. One such project that truly represents the aesthetic tendencies of the 1950s (though it was designed in 1962) in France was a design by Claude Parent and André Bloc for the *Urbaina* car [fig. 4.49]. This bizarre, bulbous contraption—that never made it beyond the model stage—was clearly a kind of manifesto piece of sculptural design, meant to refute the technological imperatives of aerodynamic automobile lines. Parent would continue to be bothered by streamlining and automobiles for some time to come. In 1965, he published a critique of current Alfa Romeo sport car designs in Bloc's journal *Aujourd'hui*.[149] Here, he bemoaned the lack of aesthetic integration, and the slavish capitulation of designers to fashion and merely technical concerns. It is interesting to note that this meditation on the shortcomings of the Alfa Romeos would come at the very time that Parent was inaugurating his collaboration with Virilio, when both would become preoccupied with "habitable circulation" and an urban population constantly in movement, thanks to inclined architectural planes.

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[148] Reyner Banham is also important in this regard, namely in his dismissal of the stylized aspects of Gropius's design and approbation of Fuller's. See Reyner Banham, *Theory and Design in the First Machine Age* (London: Architectural Press, 1960), 320-330.

[149] Claude Parent, "Un archétype: la vitesse," *Aujourd'hui* (April, 1965): 94-95.

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Nicolas Schöffer also got into the car act at the end of the sixties, and arguably more successfully than his colleagues, since his prototype was realized. In 1972, in one of his artist/corporation collaborations, Schöffer realized *SCAM I* for the *Salon de l'automobile* [figs. 4.50, 4.51]. This work consisted of a Renault-made *camionnette* or open-top "buggy," onto which was affixed a disproportionately large cybernetic sculpture/tower very much in the style of his *Tour lumiére cybernétique*. But, instead of sitting on the showroom floor during the Salon, Schöffer, literalizing the idea of kinetic sculpture, took the car on periodic spins around the city, its disks and mirrors spinning in the wind, creating a kind of cybernetic spectacle on wheels.[150]

With the dual interest in space frames and mobility that this chapter has explored, it seems only fitting to conclude this discussion of architectural cars with a project that synthesizes movement and topology. Around 1966, D.G. Emmerich developed a prototype model system for *Charettes*, or what was translated as "Deltamobiles" [fig. 4.52]. This system comprised, essentially, a motorless space frame car, that was demountable and transformable. Its standardized units of bars and connectors (and wheels and axles, etc.) could be taken apart and recombined to create larger or smaller vehicles, and to save space for storage, etc.: "Built on a chassis, body or fixed frame, the car—an object of cult in modern life—is traditional. Its weight, its size, its shape are derived from the coach and are not dictated by modern techniques. [Deltamobiles], however, allow for a town vehicle that is not only healthy—silent, odorless, light—but is also of variable geometry."[151]

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[150] See "Schöffer promenons-nous ce soir dans Paris avec la sculpto-mobile," *Connaissance des arts*, no. 248 (October, 1972): 131.

[151] Emmerich, "Deltamobiles," 412.

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It is totally unclear to me, and not explained by Emmerich, what the principle of locomotion would have been for the Deltamobiles—no pedals are visible, for example, and no provision is made for an engine. However, what is clear is that Emmerich proposed these impotent go-carts as a counter argument to urban sprawl. They would take up less space than a car, and require less infrastructural accommodation in the form of new roads, etc.. Furthermore, they could, eventually, be converted into habitable spaces via the recombination of their interchangeable units. But, as much as Emmerich asserted the Deltamobiles as a more advanced mode of transportation, it was clear that he, like so many others, simply despised what cars had done to the modern city. Rather than a way of constructing a new car geometrically, he had invented a method of topologically dismembering it, of "conjuring" it away into the highly formalized space of structure.

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Chapter 5:
Conclusion: Ambient Objects and the System of Architecture

I reaffirm the convergence of all forms of creative activity towards a culture-civilization on a global scale. The future city, erected by a thousand engineers, architects, and *plasticiens*, will respond to all the physical and psychological exigencies of humanity. Our achievements must be translated into a common language. We are authorized in this by diverse forms of art: the alphabet of the things of nature is the particle or crystal; that of living beings, the cell; that of music, sound; that of speech, the phoneme; why is it that plasticity does not have its own alphabet, its own grammar and syntax?

Victor Vasarely (1960)[1]

The aesthetician is henceforth, whether he likes it or not, the development engineer of the new arts in an epoch in which handicraft, artisans, and direct contact with materials have ceded their place to the tele-contact of program, and the artificialization of the fabrication of multiples. The aesthetician will be prospective, or he will not be at all: his role combines with that of the artist in an intellectual amplification of art based on an aesthetic structuralism of fragments of the environment.

Abraham Moles and Elisabeth Rohmer (1972)[2]

The word ob-ject represents that which is encountered, against which one struggles, before which one stops. The new environment refuses the anchorage of the old world. Our buildings, like our utensils, clash less, and instead prove themselves through action. The architecture of places of work, of leisure, of rest become more ergonomic than contemplative. The object fixes the gesture in substance; the modern work loosens [*ameublit*] substance via the gesture.

Henri Van Lier (1968)[3]

In 1959, when Guy Debord suggested to his friend Constant that he call his ideal city (which then existed as just the first few of a huge set of drawings and models made

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[1] Victor Vasarely, *Notes brutes* (Paris: Denoël/Gonthier, 1972), 48-49. This book is a collection of writings by Vasarely from the late fifties on. He dates this statement to 1960.

[2] Abraham Moles and Elisabeth Rohmer, *Psychologie de l'espace* (Paris: Casterman, 1972), 118.

[3] Henri Van Lier, "Architecture Synergique," *Les cahiers du center d'études architecturales*, no. 4 (1968): 18.

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with wire and plastic) *New Babylon*, he was referring to its multiplicity of spaces, and the potentially conflicting diversity of activities it would host. In contrast to the contemporary city, which by its nature was homogenous and controlled, *New Babylon* would be a place in which the formal and ideological equilibrium of spaces could be interrupted, transformed, and subverted. According to Constant, this new city would present a "kaleidoscopic" physiognomy, which "no longer bears any similarity to the social structures of a community life ruled by the principle of utility, whose models of behavior are always the same."[4]

But, even if Debord and Constant looked around them and saw in Paris and elsewhere a technocratic, post-industrial urban space, whose ludic elements were suppressed in favor of "utilitarian" homogeneity, other factions in the French avant-garde saw quite a different image. For most of the Spatial Urbanists, it was entirely unnecessary to create a *new* Babylon, since the upheavals caused by technological progress, economic expansion, and urban migration had already resulted in a city of blockages and imbalance, in which the sheer quantity of information and goods had transcended any sense of unity of purpose or integration of message. For them, contemporary France was already a Babel—a giant monument that was suffocated by contradictory languages competing for the limited attention and resources of inhabitants and administrators. To address this state of affairs, they proposed, as we have seen, a multitude of urban solutions—solutions that could adapt to new conditions, and

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[4] Constant Nieuwenhuys, "New Babylon," in *Theory of the Dérive and other Situationist Writings on the City* (Barcelona: Museu d'Art Contemporani de Barcelona, 1996), 157-158.

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ultimately integrate (into a unified infrastructure) the often conflicting forces of consumerism, information, traffic, technology, and politics.

In the preceding chapters, we have been concerned with the technical and architectural aspects of this integration—Maymont's floating towers, Friedman's Mobile Architecture, engineering structures, etc.. In this conclusion, I want to suggest that the fate of the Spatial City and the discourse of the GIAP does not necessarily lie in these systematically-developed architectural projects, but rather in a vast and amorphous field of confluence, in which the traditional notion of a "synthesis of the arts" comes into contact with semiotics and the critique of the consumer society in France in the late sixties and early seventies. While the architects and engineers associated with the GIAP were refining their theories and methods of implementation, several of the artists and critics involved with the group were free to develop broader claims for the possibilities of Spatial architecture and urbanism. They could do this by developing their own architectural and urban ideas, as Schöffer, Vasarely, and Chanéac did, for instance, or they could take the designs of others, and incorporate these into their own visions, as Restany, Van Lier, and Moles did. In either case, the architecture of the city was incorporated into an aesthetic and social conception of a collective life lived by everyone in a dynamic space, integrated and animated by *a coherent spatio-audio-visual language*.

In this final chapter, I want to examine these visions of the Spatial City that developed from the activities of the GIAP in the last half of the sixties. These descriptions are not always (or even usually) of a concrete character. They are vague amalgamations of aesthetic, cultural, and urban concerns, the complexity of which was a daunting problem for the commentators discussed below. I believe that this is the

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moment in which the "prospective" or visionary architecture in France of the 1960s gives way to the cultural force that was to definitively displace it: critical social theory. But, as I will suggest below, this displacement was not a simple rejection or an absolute break. Just as Schöffer, Restany, et al. were beginning to engage in a proto-semiotic exploration of the urban realm, theorists like Jean Baudrillard were relying (especially in their early writings) on a spatial notion of semiotic systems or structures that was not dissimilar to that of the Spatial Urbanists. Clearly, I am making connections here between disparate sets of ideas and agendas; the often absurd and confused ramblings of Schöffer and Restany are not in the same category of rigorous thought as the writing of Barthes or Baudrillard. However, what I want to illustrate here is the way in which the perceptual, formal, or aesthetic aspects of the art/architectural discourse were abstracted into conceptual or ideological constructs, ideas, or schemas. This collusion between a phenomenology of perception on the one hand, and a semiotics of the environment on the other is the key to understanding the fate of the avant-garde in France in the late sixties and early seventies. Furthermore, this collusion does not always take place in the realm of positive influence, but of theoretical rejection and antagonism. For example, Baudrillard's development of the theory of "the system of objects" and "simulacra" is in part premised upon his critique (not his adoption) of the theories of the contemporaneous French avant-garde (and historical movements like the Bauhaus).

This approach will mark a return to the composite image of the Spatial City to which I alluded in the introductory chapter of this dissertation. I will focus here on what I believe to be the common defining characteristics of several such composite images, described by a number of writers, all of whom, with the exception of Van Lier, were

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GIAP participants: ambient space, the need for "integration," and an overwhelming concern for developing a universal language that could incorporate space, time, and man himself into a common, stable milieu. In a very real sense, all of these concerns are inseparable; in fact, they are nearly one and the same, but it is helpful to make some distinctions in order to be able to see various lines of influence from different disciplines, and in order to trace the fate of these ideas beyond 1970. I will structure this discussion by examining the ways in which these themes were developed by individual theorists, and then by looking at their reception in the larger cultural context.

The sum of these concerns was a Spatial City that was above all *ambient*. It was an atmospheric sublimation—on both the technological and experiential levels—of all the competing languages of the postwar French and global Babel. The final synthesis would be a space rich in aesthetic experiences for the inhabitant—spectacles and interactive events that would enhance spatio-temporal perception. Within this richly textured atmosphere, objects—art works, buildings, appliances, tools, etc.—would cede their individuality, their material specificity, to the larger, plastically-animated milieu. This notion of urban space was not entirely new. We encounter it under a number of different names during this period: ambient or atmospheric space, climates, Klein's "aerial" architecture, etc.. In each case, the space is formulated as a phenomenological, synesthetic environment that only comes into being through the perception and participation of the users/inhabitants. It transcends the physical or technical details of architecture or the furniture of the environment, and becomes a palpable, yet ethereal structuring device. This aleatory, sensuous, ambient environment was for several GIAP members the *raison d'être* of Spatial Urbanism. It signaled the next step for

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functionalism, the move away from mere technology to a science of atmospheric experience.[5] We should also point out here that the interest in ambient space can be traced to the Situationists, who relied upon the "psychogeographic" ambience of particular locations in the construction of situations.[6] Constant became one of the greatest theorists of ambience and atmosphere of the sixties.[7] But, as with other instances we have seen, the superficial resemblances between the more radical Situationist posture and that of the Spatial Urbanists belied profound differences in program and ideology.

Schöffer normally described ambience as atmosphere or climate. These climates were constructed "topologically" and consisted in various perceptual stimuli from lights, sounds, air currents, and interactive works of art. Restany also tied what he called various artists' (Klein, Agam, Fontana) "cosmic vision of space" to the construction of environments in which the viewer or user would "assume conscious responsibility for his own ludic activity."[8] Restany saw these environments as incorporating the "urban folklore" on which he seemed quite fixated, as an integral part of a new type of art which he envisioned as a kind of *nouveau réaliste* happening, or spectacle. The artist would essentially activate the Spatial Urban infrastructure with plastic and other aesthetic phenomena. For Schöffer these would be cybernetic machines, for Restany various

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[5] It should be noted here that the accredited architects in the group—Friedman and Maymont—seemed the least interested in these aesthetic formulations, focusing instead on concrete implementation, and offering more options to the users.

[6] A "constructed situation" was defined as: "A moment of life, concretely and deliberately constructed by the collective organization of a unitary ambiance and a play of events," *Internationale Situationist* no. 1 (June, 1958): 13. See also: Jean-Louis Violeau, *Situations construits* (Paris: Sens & Tonka, 1998).

[7] He speaks frequently of the "play of ambiences." See "New Babylon" the 1974 essay translated an reprinted in *Theory of the Dérive*, 154-169.

[8] Restany, *Superlund*, 37.

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works of Cesar, Arman, Klein, et al..[9] Schöffer's friend, and Op Art pioneer, Victor Vasarely contributed to this discourse the notion of *plasti-cité*, a hyphenation (and urbanization) of plasticity, which was essentially a way of incorporating Restany's urban "planetary folklore" into his own *Art Cinétique*.[10]

With surprising consistency, this notion of a perceptually-enriched, ambient space was connected to the idea of communication. For Schöffer: "Programmed climates have a potential for direct communication."[11] For Restany, the new spaces of art and atmosphere would lead to a "spatialism of communication," in which the spectator would be directed through a programmed environment.[12] In retrospect, it is difficult to understand the possible connections between totally abstracted aesthetic experiences and "direct communication." But, we have to remember that the notion of communication being discussed here was essentially a plastic one—which is to say that the "form" of the spectacle was to become one with its "content," which is perhaps the most traditional of avant-garde aesthetic positions. But applying this logic to the whole of the urban environment would require an expansion of traditional artistic concerns.

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[9] The dovetailing of postwar art and the conception of the ideal city are given a good contextualization in Maurice Fréchuret, "La cite idéale et la tribu primitive," in *L'art en Europe: les années décisives, 1945-1953* (Geneva: Albert Skira, 1987), 136-143. Fréchuret points out that "[...] les artistes de l'abstraction géométrique [Schöffer, Vasarely, Jean Dewasne, Jean Gorin, Georges Vantongerloo] travaillent à l'elaboration d'un art don't la perspective est de prendre place dans l'espace réel, en tenant compte des besoins de l'homme moderne [...]." p. 138.

[10] The second edition of his book of the same title was published in Ragon's *Mutations-Orientations* series: Victor Vasarely, *Plasti-cité: l'oeuvre plastique dans notre vie quotidienne* (Paris: Casterman...). *Notes Brutes* contains many of the same themes. See also: Victor Vasarely, "La cité polychrome," *Mélpomène*, no. 16 (December, 1964): 13.

[11] Schöffer, *La ville cybérnetique*, 95.

[12] Restany, *Superlund*, 37.

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This dual interest in aesthetic and spatial ambience, and communication manifested itself in the phrase "integration of the arts." We can see that the obsession with an integrated urban space was linked to the synthesis of the arts, which had such a strong presence in the French context. Plasticity was the integrative function par excellence; through form, color, texture, etc., disparate elements could be made compatible on the structural level. Theorists like Bloc and Francastel had established the program whereby the traditional *gesamtkunstwerk*, conceived as a synthetic but isolated work, was replaced by the application of the means and methods of plastic integration to the environment as a whole. In other words, the "synthesis" of the arts in a single object (usually the building) was replaced by the ubiquitous "integration" of plastic qualities to everything.[13] Here, we see the legacy of Neoplasticism converging with the postwar fascination with science, mathematics, semiotics, and topology.[14] Different writers obviously had different visions of what this new, plastically integrated environment would look like, but they are overwhelmingly consistent in believing that plasticity was the missing element of cohesion in a chaotic society: "Like language, art enables men who have nothing in common to build a collective society. It is one of the many links that enable men who live in different eras or places to agree on ideas, through the set meaning of certain signs."[15]

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[13] Though it is often implied, Vasarely was the most systematic in making a strong distinction between an older mode of "synthesis" and a newer, technologically-based mode of plastic "integration": Vasarely, *Plasti-cité*, 123 ff.

[14] See Francastel, *Art and Technology*, 301.

[15] Francastel, *Art and Technology*, 281.

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Integration was the key to achieving the ambient Spatial City. Every individual element had to be integrated into the larger whole by virtue of a common "essence." Even functionally and formally different objects would be rendered totally compatible because they would be based upon or constructed by common principles. This has, of course, been the leitmotif of this entire study—the attempt to define rational axioms, principles, or structures (physical and conceptual) that were basic and universal enough to support the vast diversity of human life in the urban environment. Determining these structures was a matter of distilling the lowest possible number of the most basic elements—what in linguistics were called semanthemes or *phonemes* (the linguistic analogy is, as we will see, entirely valid here)—and then proceeding to experiment with various combinations of these elements. The space frame was the most literal manifestation of this idea, but its principles were applied to everything—communication, transportation, art, science, mathematics, the list goes on.

The importance of this conception of integrated space in the writings we will examine below is often indicated by an inordinate fixation on what was considered to be its opposite—the object. The object, be it a painting on a wall, or a refrigerator, or a car, was an environmental element that resisted the concatenate logic of ambient spatiality. It was a stubborn signifier, a stoppage, and as such it had to be effaced, or integrated into the larger milieu or infrastructure. Of course, this concern with the semiotic and technical aspects of objects was by no means limited to the participants of the GIAP. It constituted what was becoming a veritable genre of thinking about technology and culture in France in the fifties and sixties. This body of literature began with Lefebvre's "discovery" of everyday life through its most common activities and objects in 1947, and

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reached a climax with Jean Baudrillard's 1968 *Le système des objets*, which was an analysis of the contemporary proliferation of things, of *trucs*, of gadgets that filled daily life, and shaped it on the "technological plane."[16] In between these two philosophical bookends, we could cite many more fascinating sources: Gilbert Simondon's influential *Du mode d'existence des objets techniques*, Barthes's columns in *Les letters nouvelles* that analyzed objects and materials like the Citroên DS 19 and plastic, and Francastel's discussion of utilitarian objects in *Art et technique*.[17] In 1965 Georges Perec wrote a novel devoted largely to objects titled *Les choses: une histoire des années soixantes.* Though not exactly equivalent in their approaches and underlying assumptions, both Perec and Baudrillard recognized that the contemporary "system" of objects was one in which their individual reality and function was subordinated to their place in a structure, or within a larger syntactical system comprising a vast array of other objects. Just like Godard's soapboxes, these objects fulfilled their functional destiny, not in the finality of a specific task, but by their participation as a grammatical unit in the system of functional/technological signification. Thus, we can see the ways in which our present themes of ambient space, integration, and language converge.

Moreover, all of these themes converged in the discourse orchestrated by Michel Ragon, under the auspices of the GIAP symposia in 1965 and '66, and Ragon's *Mutations-Orientations* series of books that began to appear after the dissolution of the GIAP in 1970. The participating engineers, industrial designers, architects, artists, and a

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[16] Baudrillard, *System of Objects*, 5.

[17] Gilbert Simondon, *Du mode d'existence des objets techniques* (Pars: Vrin, 1957); Roland Barthes, *Mythologies* (Paris: Seuil, 1957), trans. Annette Lavers as *Mythologies* (New York: Hill and Wang, 1972); Pierre Francastel, *Art and Technology*, 127-167.

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new breed of sociologist, effectively developed a new pseudo-science of the Spatial City in these symposia, and the subsequent publications—a discourse that approached the idea of urban form and function from nearly every conceivable angle from the economic, to the technical, to the aesthetic, to the socio-psychological. Viewed comprehensively, one can see currents of influence from a variety of sources (with little concern for their compatibility): Neoplasticism, gestalt psychology, phenomenology, Structuralism, demography, etc.. This multidisciplinarity was clearly influenced by the teams (of *cadres*) being used at the time for scientific research and industrial development, and also to a certain extent in the planning of new towns. But, more than just covering all of the angles of urban existence, the discourse of the GIAP signaled an attempt to make all of these different disciplines structurally equivalent, to get them to communicate. Time and again, the common thread that promised to make this possible was space, or rather, a topological model of ambient spatiality.

Nicolas Schöffer's vision of the Spatial City received a thorough treatment in his book *La ville cybernétique* (1969) [Fig. 5.1], which comprised ideas and projects that he had been working on for over a decade, brought together and synthesized into a single urban conception: the eponymous *ville*. Schöffer's city would have been one gigantic computer, whose main activity was the production of ambient spaces for a variety of functions: work, leisure, sex, shopping, etc.. Inhabitants would move through the spaces of this city, sometimes passively enjoying its spectacles, and sometimes actively programming them, and creating new ones. Cybernetic towers, like the one he installed in Liège would dot the landscape, projecting light and sound into the topological environment, creating a new space of light, movement, and time [Fig. 1.8]. People would

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live in *coquilles conditionées*, or programmed shells, in which inhabitants were subjected to a "constant but dynamic equilibrium" of sensorial effects: temperature, light, movement, etc., all cybernetically controlled.[18] These people had to work too, of course, and they would do so in laboratory-like spaces held aloft by giant space frames [Fig. 1.5]. These scientific and administrative structures resembled Schöffer's towers and sculptures blown up to a gigantic scale.

At the heart of this city was the computer (three, actually), constantly receiving data, processing it, and answering its requirements with new information and directives for various urban systems and services. The three functions of these computers treated every aspect of society itself. *Ordinateur A* controlled information and behavior; *B* controlled modifications and perturbations (see below for this term); *C* dispensed governmental mandates and regulations. The relationship between the city and this organizational nucleus was a circuit, in a state of constant modification. Data input from the city (its inhabitants and infrastructure) would be sent and processed by the computers, and the necessary modifications would be made (modifications in quantity and/or quality of services, for instance, or new regulations to accommodate new social practices).

For Schöffer, the modern phenomena of the population explosion and of rampant technological process were not ills to be cured, but rather events that simply needed to be controlled, kept in check, by a system that would operate on principles that remained constant, but which could nonetheless adapt to unforeseen circumstances. This cybernetic system was the Prospective apparatus par excellence: change and modification within an unchanging conceptual model. Of course, the whole idea was inspired by

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[18] Schöffer, *La ville cybernétique*, 126.

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Norbert Wiener's theories of communications and control that were developed during the Second World War.[19] Then, Schöffer incorporated the idea into his own social theories. The result was a city that was both sterile and dynamic—constantly changing, but never tipping toward excess in any direction.

Within this framework, Schöffer even envisioned controlling what he perceived as the natural cycle of social revolutions. Obviously with May '68 still fresh in his mind, Schöffer proposed the cybernetic control of social "*perturbations*" or the upheavals that were absolutely inevitable in a climate of accelerated technological and cultural transformation. Schöffer considered the May events as the *prise de conscience* of a specific sector of society—the intellectuals in the university—who rejected contemporary society because they realized that all technology had provided was a "quantitative" abundance of goods and services, but not a "qualitatively" better existence.[20] By Schöffer's reasoning, while the May revolution was absolutely justified, it needn't have been so violent and disruptive. His cybernetic system would be able to foresee and contain such perturbations, rendering the social results of these revolutions, without all the barricades so to speak.

Schöffer's ultimate goal was a unified urban functionality, in an ambient, plastically animated space. He reigned in all the forces of perception and history, from museum gift shops to coup d'etats, and subjected them all to the same rigorous treatment,

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[19] See Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine* (Cambridge: MIT Press, 1948), and *The Human Use of Human Beings* (Boston, Houghton Mifflin, 1950). Schöffer attempted to contact Wiener in the early sixties, but he received a curt rebuff—apparently, Wiener saw little connection between his science and art. Conversation with Eléonore Schöffer, January 16, 2002.

[20] Schöffer, *La ville cybernétique*, 33-34.

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so that they could all operate on the same principles; so that they could all communicate in the same integrated language.

The object presented an acute problem in this regard. Schöffer considered, as did so many others, the inhabitant and user of the city to be a "consumer" of its services and products. The widespread distribution of consumer goods in contemporary society was inevitable, and represented a positive "leveling" of the means of access to various resources.[21] This represented progress for Schöffer, to be sure, but it was not nearly enough. The current proliferation of and access to both consumer goods and aesthetic products was only the quantitative side of the problem; the qualitative side had yet to be addressed. This is where the artist stepped in. For Schöffer, the artist's job was a constant refinement of public taste via the creative manipulation of the art "object," which, given time would cease to be an object at all.

Schöffer, like a good cybernetician, considered all objects, be they sculptures or detergent packages, to be one link in an informational circuit. Objects were the mediating link between the "idea" and the "effect":

> The essential part of artistic creation is the provocation of the effect of the idea, even if it passes via the object, one should avoid conferring this ability of the production of the effect exclusively, or even partially on the object. It is the idea that must produce the effect. When it is the object that produces the effect, there is no viable artistic creation.[22]

There is a distinct collusion in Schöffer's rhetoric of the consumer object and the art object. He refuses to treat them as separate entities, which leads to a certain ambiguity (no doubt intentional) in his text. As soon as he mentions one, it becomes the other:

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[21] Schöffer, *La ville cybernétique*, 87-88.

[22] Schöffer, *La ville cybernétique*, 78; see also 63-67.

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> For the last two centuries, the progressive development of this tendency towards leveling [of access to goods] has revolutionized traditional routines of human exchange.
>
> Equal access for everyone to material consumer goods is now appearing in developed countries, and one can already see its essential effect: equal access to all real aesthetic products.[23]

For Schöffer, industry and art were coming together, not on a stylistic level (the machine aesthetic) but on a structural level. The superficial expression of this convergence was Pop Art, which he detested.[24] The authentic potential of this convergence was that the infrastructure of production and distribution that had been used to fill the modern world with a vast *quantity* of goods, now had to be turned towards the development of a higher *quality* of object, the aesthetic object.

These took two main forms: aesthetic objects for "mass consumption," and for "individual consumption." Mass consumption objects were large-scale environmental installations, like Schöffer's cybernetic tower proposed for *La Défense* (see Chapter 3). These would create urban spectacles "consumable" by the larger populace. Likewise, aesthetic objects for individual consumption were purchasable and transportable, but much like their larger counterparts, they were cybernetic devices that would transmit different effects topologically: light, sound, temperature, etc. [Fig. 5.2]. Schöffer's small-scale sculptures could be considered in this category, as could his *Prisme* (1961) [Fig. 5.3] a pyramidal joining of mirrored surfaces, with moving and lighted elements inside. Schöffer produced one truly mass consumption item: the *Lumino* (1958-1968) [Fig. 5.4] that was produced in limited numbers and sold commercially. This was a TV-like unit

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[23] Schöffer, *La ville cybernétique*, 89.

[24] See his diatribe in Schöffer, *La ville cybernétique*, 14.

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with a monitor, behind which light projections created a constantly changing mini-spectacle.

All of Schöffer's work, and his conception of the Spatial city as well, was based upon the idea of the manipulation of a very limited, very abstract set of "topologies." These fields: light, time, climate, space, etc. can be considered the morphemes of his visual language. This language was explicitly abstract in the sense that it was non-representational, but Schöffer tried very hard to detach it from the old notion of formal abstraction or formalism. In a brief essay entitled "*non-formalisme*" Schöffer explained his position on this topic:

> In the current evolutionary phase of artistic research, I assert that the work must detach itself absolutely from the problem of form.
>
> The formal aspects of works must be reduced to an absolute minimum of signs which can be used to create a visual (or audio-visual) language in the service of programmations of all kinds, diversified to their most extreme limits, in order to realize temporal and microtemporal structures, which are organized to obtain varied amplitudes via the combined occurrence of events (complex or simple) and their retroactions.[25]

This passage is rife with Schöffer-ese which I will not bother translating here, but suffice it to say that he, like many others, saw a distinct connection between a post-industrial artistic production, an updated neo-plastic aesthetic, and the urgency of devising a language that could make all the diverse elements of an environment communicate. The object, be it aesthetic or commodity, was both a hindrance and a key to this spatial language.

Victor Vasarely approached the object in a similar fashion, but never gave the same sustained attention to it that Schöffer did. He, like Schöffer saw in industrial

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[25] Schöffer, *La ville cybernétique*, 95. It seems likely that this essay was also presented at one of the GIAP symposia in which Schöffer participated, as I found a manuscript with the same text in the "GIAP" folder in his archive.

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technologies the ways and means for the production and distribution of art "multiples" that would function as quality aesthetic objects that would appropriate the consumer infrastructure, replacing base commodities with real works of art.[26] In addition to the production and distribution of multiples, Vasarely posited the idea of the "polychrome city," which incorporated large scale examples of scientifically applied coloration and relief to architecture, as well as various other forms of art such as the filmic or moving image, or Vasarely's own Op Art, what he termed at the time *Art Cinétique*. Seemingly inspired (like so much of the postwar visionary discourse) by German Expressionism, Vasarely envisioned (though he never illustrated it) cities that were constructed with these plastic integrations as part of their fundamental conception.[27] Like the other GIAP participants, he saw teams of specialists collaborating on the design of urban spaces to address all of its aspects: aesthetic, technological, and sociological. He was willing art towards science, and the city seemed like the natural milieu in which to apply the newly-derived plastic laws[28]:

> The polychrome city—in the sense of the diversity of its interior and exterior cladding [*revêtement*]—seems to me like a perfect synthesis of all the plastic disciplines. It therefore constitutes the complete aesthetic function relative to the plastic value of a physical space. The image of these syntheses, which proposes a space and its specific form in a social structure, is provided for us, for example, in the Gothic period.[29]

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[26] Vasarely, *Plasti-cité*, 99-110.

[27] It is unclear how much direct influence there was from the likes of Bruno Taut and Paul Scheerbart. German Expressionist projects were certainly published and known, but most French commentators, in trying to assert their ideas as totally new, would likely have been reluctant to acknowledge sources from earlier in the century.

[28] Vasarely, *Plasti-cité*, 12-13.

[29] Vasarely, *Plasti-cité*, 12. This passage illustrates the continuity with the interwar avant-gardes, especially the early, expressionist phase of the Bauhaus, in its appeal to the "integrated" society of the middle ages. This connection was not uncommon, and was made by Schöffer as well.

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Schöffer and Vasarely were not alone in wanting to unify the language of the diverse elements of the urban environment. His friend and fellow GIAP-er Pierre Restany had similar ambitions. In the catalogue for his 1967 *Superlund* exhibition, which I discussed briefly in the first chapter, he signals 1960 as a turning point: "1960 was an important year, a pivotal year in the postwar period. This was the year of crisis: a crisis of language and a crisis of values. [...] An entire generation came to a understanding of a NEW SENSE OF NATURE that was based upon the global extension of industrial and urban phenomena."[30] For Restany, this new consciousness involved the construction of a totalized urban space (based upon the principles of Spatial Urbanism) that would allow for the free play of this new language of urban and industrial phenomena. Since he was writing primarily from the perspective of an art critic, Restany maintained that those artists that he had designated as the *Nouveaux Réalistes* were the ones who had deciphered this new language (Arman, César, Christo, Klein, Tinguely, etc.). Their strategies of using found objects, industrial materials, creating environments and happenings, and making works in series had captured the essence of the new society, of what Restany termed the new "urban folklore."

This new urban folklore was fundamentally about communication and language. Restany saw a new era of the artist integrated into society, no longer making traditional *objets*, but creating large scale mediating objects for the urban environment, acting as a mediator himself, between people, and between people and their surroundings ("the artist

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[30] Restany, *Superlund*, 27.

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is in the process of imposing a new language of communication between men"[31]). "All contemporary [artistic] experimentation has a common objective: to organize this acquired folklore into a modern language, a generator of new relational rapports [*rapports de relation*]."[32] The Spatial City was the grand infrastructure for this new conception of the human environment. It structured the dynamic interplay of elements into a common language, by providing them a grammar and syntax: "[t]he evolution of contemporary art engenders an entirely new structure of communication that relies upon the central notion of the behavior of the spectator. Between the aesthetics of the object and Spatial Urbanism, it is possible to define a structural scale of communication on which rests the social justification for art."[33]

Like Schöffer, Restany saw art's future in participation (of the spectator) and programmation (of the work). Art would no longer be in the form of an exchangeable easel painting or small sculpture. It would only exist thanks to the activity of the observer, and furthermore, it would expand its scale, to fill the urban environment. This environment, subsequently, would share the same qualities as the art—participatory and transformable. Everything was possible it seemed, if only everything in the city was communicating. Furthermore, this communication could only find its true ambient expression, as far as Restany was concerned, via the artist's action in the aleatory spaces of the Spatial infrastructure:

> It is only in this type of architecture [Spatial Urbanism] that the artist can assure the coordination and the unification [*recoupment*] of the collective and individual

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[31] Restany, *Superlund*, 38.

[32] Restany, *Superlund*, 32.

[33] Restany, *Superlund*, 37.

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> sensibilities. It is thus that his views of spirit will become vital necessities. Architecture of the air and the climatization of large geographical spaces will allow for the return to a state of nature in a technological Eden, whose pathways will be directed by the visual arts and in which all the propositions of space will have their full justification, which is to restore to the alienated and mechanized urban masses the sense of play, of the fête, of collective emotions, the taste for grand metamorphoses.[34]

As with Schöffer, we again find the object at a central, problematic location in Restany's vision of this new city: "This current art relies upon the central concept of the expressive autonomy of the everyday object in so far as it is an organic and constitutive element of modern nature. The subsequent aesthetics of the object implies a new structure of communication."[35] It really is quite astonishing how easily the object slides into this structure of communication, activating it, completing it, becoming it:

> ACROSS ALL THE VARIOUS TREATMENTS OF THE EVERYDAY OBJECT, THE 21ST CENTURY GIVES BIRTH TO THE DISCOVERY OF THE FOLKLORIC TECHNOLOGY OF THE SECOND INDUSTRIAL REVOLUTION. All the paths of contemporary experiments have a common objective: to organize this acquired folklore into a modern language, a generator of new relational rapports.[36]

In both Schöffer's and Restany's case, we find the dawning comprehension of the object as an integral part of the urban landscape as a quasi-magical entity (as Barthes often described consumer goods, but obviously to a much different effect) that transcended its mere function in order to participate in the larger, linguistically structured milieu. The fact that there was a faction of artists and critics that saw an identical role for the art object should probably not surprise us; technology, landscape, movement, and

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[34] Restany, *Superlund*, 37-38.

[35] Restany, *Superlund*, 28.

[36] Restany, *Superlund*, 32.

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communication were sublimating into a single (albeit flexible) entity—art could play a pivotal and integrative role in this sublimation, or it could be left behind.

Another theorist of the Spatial City, though he was not a GIAP member, was the philosopher Henri Van Lier (b. 1921). Van Lier taught in France and Belgium during the fifties and sixties, and published a popular and influential book entitled *Les arts de l'espace* in 1959. In 1962, he followed this treatise up with a kind of socio-ethical tract on the impact of technology on society called *Le nouvel age*,[37] which introduced his notion of "synergy," which he borrowed from biology, and which describes the way in which two or more organs or bodily systems (like muscles and neurons) cooperate toward a shared goal. In devising a comprehensive theory of built space it was this notion of synergetic communication that Van Lier employed to describe the way in which buildings and infrastructural systems would work together and form a unified, integrated urban system [Fig. 5.5].[38]

Though he was not associated with the GIAP, Van Lier nonetheless turned to the usual Spatial suspects in envisioning what the synergetic city might look like—Friedman, Schöffer, Otto, the Metabolists, etc. (he also didn't hesitate to include the idea of the "oblique" of Architecture Principe). Unsurprisingly, he saw a city of vast structures that

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[37] Henri Van Lier, *Le nouvel âge* (Paris: Casterman, 1962). Van Lier describes this text as a kind of post-Spenglerian treatise on the post-industrial period (p. 7). He feels that Spengler's perception of a West in decline is merely symptomatic of the dawning of a new age whose ambivalence and trepidation arise from the fact that no historical frame of reference can be applied to the new developments. His book, an inclusive text that discusses science, mathematics, art, technology, and philosophy, purports to provide such a frame of reference. Like his contemporaries, he was concerned with defining the basic principles that united diverse fields of human experience and disciplinary methods.

[38] Henri Van Lier, "Architecture synergique," *Les Cahiers du CEA*, no. 4 (1968): entire issue. This, it should be noted, was the same journal in which GIAP members published some of their most important statements (Sarger, Friedman, Rottier, etc.); their articles, like Van Lier's were developed from the presentations they gave at the CEA at the end of the sixties.

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would be flexible, light, and mobile. The city would provide efficacious routes of communication and transportation, and everything within it would share these fundamental principles, and communicate. Synergetic space was a space of leveling and functional fusion. Van Lier saw buildings that opened onto the landscape, that became the landscape; he saw furniture fusing with its architectural environment, circulation melding with habitation (cf. Architecture Principe) and man entering into a more or less unmediated relationship to his new surroundings.[39] It should come as no surprise that part of this synergetic fusion of form, function, and signification was the elimination of the "substance" of the individual object (see above).

Though it is less overt in Van Lier's conception (compared to that of Schöffer and Restany), the integrated Spatial City was thus composed of two very different, if not incompatible aspects. Integration was a rationalist and essentially Structuralist process, which led to an ambient space described almost exclusively in terms of phenomenology, or individual psychosomatic response. For Schöffer, Restany, et al., this was not a paradox as much as it was a synthesis of opposites; when properly applied, the science of abstract principles led to a space of pure sensorial experience. No one understood this duality of Structuralist method and phenomenological result better than Abraham Moles (1920-1992). From the 1950s on, Moles had devoted himself to studying cultural phenomena from the psychological, semiotic, and phenomenological points of view. He worked at the famous *Hochschule für Gestaltung* at Ulm from 1961 - 1968 (during Maldonado's tenure), where he no doubt applied the ideas he was developing concurrently, and partly through his participation in the GIAP starting in 1965. In 1966,

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[39] Van Lier, "Architecture synergique," 13-15.

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he was able to fully explore his multidisciplinary interests when he formed the *Institut de Psychologie Sociale des Communications* at the University of Strasbourg I, where he was also teaching.

In a profound sense Moles embodied the Prospective spirit more than Ragon. He worked diligently to demonstrate that seemingly disparate philosophical traditions were not only compatible, but were essential in the analysis of the way in which signification occurred in the cultural sphere, and the ways in which these could be applied to a new conception of aesthetic experience. He was profoundly influenced by Bachelard as much as by Lévi-Strauss and Barthes. He became fascinated by contemporary phenomena—art, kitsch, computers, experimental music, cybernetics—and sought to rigorously categorize and interpret them. And, like so many others in France at the time, he became fixated to a certain degree on the semiotic and phenomenological aspects of space.

Moles' major work on space of 1972 was written in collaboration with Elisabeth Rohmer, and was entitled *Psychologie de l'espace*. The text was published as part of Ragon's *Mutations-Orientations* series of texts, which was, as is becoming apparent, a kind of tribute to and extension of the activities of the GIAP. In this text, Moles elaborated on a presentation given at one of the GIAP symposia at the Musée des Arts Decoratifs in 1966, "Les coquilles de l'homme," and extended his analyses far beyond.[40] At the heart of Moles' and Rohmer's thesis was the very Structural/phenomenological duality mentioned above. They termed the first of the two positions a "philosophy of

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[40] Ragon archives: unpublished manuscript of a lecture given at the Musée des Arts Décoratifs, February 23, 1967, MRAGO.mx005/7.

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centrality," and the second a philosophy of "Cartesian extension." The former position was one in which space was perceived from the subjective, individual position; phenomena were perceived in successive phases as the subject (the center) moved through various spaces (it was, in other words, the picturesque). Objects are judged from this point of view by their spatial relationship to this subject (they are near or far, etc.). This first position of "centrality" was sensorial and mutable.[41]

Cartesian extension comprised a view of the world as "extended and unlimited, contemplated by an observer who does not live there, in which all points are *a priori* equivalent [...]. 'Space' is reduced to a triangulated set of coordinates, whose axes are of arbitrary origin [...]."[42] From the Cartesian perspective, the observer of the space in question was absolutely detached, perceiving a neutral field marked out solely for the convenience of mapping. Issues of scale, distance, composition, etc., were totally abstracted. This position was clearly that of the traditional planner, according to Moles and Rohmer, and on the other hand, centrality represented the perspective of the average inhabitant of planned spaces.

The remainder of *Psychologie de l'espace* is an extended argument in favor of a new type of environmental design, of what the authors so compellingly described as "an intellectual amplification of art based on an aesthetic structuralism of fragments of the environment." For Moles and Rohmer, both the doctrines of centrality and extension had to be incorporated into this model of design. The latter could be used to topologically organize the landscape on the macro scale, while the former could be used to construct

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[41] Moles and Rohmer, *Psychologie de l'espace*, 8-9.

[42] Moles and Rohmer, *Psychologie de l'espace*, 9.

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specific places and ambient spectacles within those spaces.[43] It is thus not surprising that in their final chapter, the authors invoke that talismanic phrase of Valéry: "*la plus grande liberté nait de la plus grande rigeur.*"[44]

The platform for these activities was the Spatial architecture with which Moles had no doubt become familiar through his GIAP activities. The architecture of Friedman and Maymont, especially, signaled for Moles and Rohmer the concrete possibilities of a technological utopia.[45] For the authors, this new utopia was a vast built space that would allow for the participation of the inhabitants in its aesthetic spectacles, and for their free movement and "appropriation" of its spaces.[46] This new conception of the city was both topological and "permutational." Moles and Rohmer imagined a rich urban labyrinth, whose *parcours* were animated by art and spectacles. This city would be designed by accounting for both the subjective, phenomenological sense of personal experience (at the level of the artist and the spectator), as well as the Cartesian, "structuralist" method of spatial arrangement (the planner's perspective):[47]

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[43] Moles and Rohmer frequently employ topology to describe various spatial distributions. At one point, they even suggest a "toposociology" of space, p. 19.

[44] Moles and Rohmer quoting Paul Valéry, *Psychologie de l'espace*, 145. I want to indicate here that I am fully aware of the serious injustice I am doing to this now-forgotten text. Despite its dubious propositions, this is a rich work with an incredibly broad scope, and should have a much more important place in both the histories of art and philosophy in France in the postwar period. I have taken only its most overt argument to incorporate into my own thesis.

[45] Moles and Rohmer, *Psychologie de l'espace*, 76.

[46] The use of the term "appropriation" probably signals here the influence of Lefebvre, whose *Le droit à la ville* is cited in their bibliography.

[47] I am not imposing the use of the term structuralist in this regard: "Il n'y a plus de Nature dans une société urbaine et technologique qui *reconstruit de toutes pièces les éléments de son environnement.* La philosophie structuraliste qui pretend assembler un certain nombre d'éléments selon un certain ordre appelé structure est l'expression pragmatique évidente de la

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> The role of the artist-creator is no longer to make works, but to make ideas to make works, to make a meta-creation, to propose new arts and to experiment on them; arts situated in new dimensions and apprehended through complimentary means of a sensibility rich in possibilities of sensualization, touch, smell, acceleration, balance, or reciprocally all of the acts and movements by which the individual knows the world of extension. The *human operator* to whom we refer possesses the ability, duly noted by cybemeticians, to spontaneously explore the free space that is offered to him in so far as it is always full, or as we would like to say, always well-nourished, which is to say possessed of a vital *surplus of energy*, and *free time* in his schedule in which to consume.[48]

Though he did not address the topic in *Psychologie de l'espace*, Moles was intensely aware of the ambivalent role of the everyday object in the urban environment [Fig. 5.6]. In 1972, he published what must be acknowledged as one of the major works in the French discourse on objects. *Théorie des objets* purported to be a more scientific approach to the issue of the object in modern society than Baudrillard's earlier *Système des objets* that Moles seems to have considered the ideological whining of a mere philosopher.[49] His treatise was objective and taxonomic, and attempted to address the way in which objects signified (the semiotic approach) in the man-made environment, and their psychological and phenomenological effects on the individual. Moles (not so differently from Baudrillard after all) posited the modern, industrial object as the privileged mediator between man and his environment—both the "near" and the "far."[50] The object could be a tool, having a more or less simple role mediating a human gesture

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vrai nature d'une société moderne de l'artificiel dans lequelle la «nature» est réduite aux parcs nationaux entourés de grilles et de pancartes." P. 141.

[48] Moles and Rohmer, *Psychologie de l'espace*, pp. 114-115. On the labyrinth in particular see pp. 137-141.

[49] Abraham Moles, *Théorie des objets* (Paris: Éditions Universitaires, 1972), p. 20. Moles does not invoke Baudrillard's name in this passage in which he describes the philosopher denouncing alienation and man's "enslavement" to commodities, but later allusions in the text make the connection more clear.

[50] Though he did not elucidate his theory of objects in his *Psychologie de l'espace*, he re-iterates the latter in his *Théorie des objets*, p. 8-10.

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and its effects on matter, or it could be a social mediator with more complex semiotic functions like signaling social status, or establishing the links to form an ensemble of objects like that owned by a collector.

Moles's sources are characteristically diverse. He relies heavily on Lefebvre's critique of everyday life, but he denudes it of its Marxist or radical content; he draws on philosophy, science, and popular myth alike. In the end, he wants to construct a model of the object as both a physical entity, and a subjective entity that exists in and by human perception. He concludes that objects are quasi-magical, and possessed of a kind of fetishistic power—one that threatens to overwhelm society in the near future through sheer accumulation. But, more importantly for our purposes here, Moles understands the object as a spatial entity, as a mediator between man and his various milieus. The object defines domestic space—the apartment. On the other hand, telecommunications objects help to establish relations in distance. Furthermore, he understands objects as syntactical systems, whose links are established both physically (via functional relationships) and semantically or semiotically (via relationships of connotation, etc.).

In brief, the object, for Moles, embodies the phenomenological/structural duality described above. He is less insistent than his avant-garde compatriots on the absolute integration of objects into the social infrastructure, in part, because he already sees such an integration taking place on the semantic plane. He has understood that the object is not a stoppage in the flow of communication as Schöffer thought; rather it is already an integral part of social messages and human gestures. For Moles, objects *are* communication—even if the messages carry too much semantic noise. But this 1972 text distances itself from many of the GIAP-related commentaries of the late sixties in its

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acceptance of the object as a necessary (or unavoidable) element of the urban environment.

For the members of the GIAP and the other French utopians discussed above, the integrated consistency of the urban infrastructure was threatened by the signifying ambivalence of the (consumer or art) object. The traditional easel painting in the museum, like the box of detergent in the supermarket, presented a short circuit in the flow of people and information—in the network of social and technological communication. The ubiquity of the term and theme of "communication" in the French postwar context has been discussed elsewhere.[51] As Ross points out, the mania for communication in all aspects of modern life was connected to the widespread rationalization of various fields, which was spearheaded by the development of Structuralism in anthropology.[52] In a passage seemingly inspired by Baudrillard, Ross

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[51] See Kristin Ross, *Fast Cars Clean Bodies*, 6, 191-192. See also Michèle Cone, "'Métro, Boulot, Dodo:' The Art of the Everyday in France, 1958-72," in Lynn Gumpert, ed., *The Art of the Everyday* (New York: NYU Press, 1997), 53.

[52] I have invoked the term "Structuralism" many times in this dissertation. It seems appropriate in the current discussion of semiotics to be more precise about my understanding of it. The word is sprinkled throughout the various writings of Moles, Van Lier, and others who were associated (directly or indirectly) with the GIAP. But does this indicate a direct influence, or a rigorous understanding or adoption of Structuralist principles on the part of the GIAP? No. Ragon claims not to have been influenced by Lévi-Strauss and other Structuralists at all (interview with Ragon, April 8, 2002). Moles invokes the rhetoric most explicitly [see especially: Abraham Moles, *Art et Ordinateur* (Paris: Casterman, 1971), p. 13, in which Moles asks: "Can there exist an art defined by 'structuralism,' which has been described as the true philosophy of the modern world, a philosophy that, refusing the traditional emergence of signifying objects on the plane [*toile de fond*] of nature, reconstructs in a systematic fashion the environment in an *assemblage of elements* according to a certain number of rules, which is called a 'structure'?"], while the others merely seem entranced by similar concerns, such as combinatory systems, and the underlying principles of social phenomena. In general, the word "Structuralism" was widely popularized in France in the sixties. So much so that it was taken out of its strict linguistic/anthropological context and discussed in newspapers and in the public realm in an ever more diluted way. Most of the time when the term appears in the architectural context it is invoked in this loose manner (with exceptions listed in Chapter 1). Perhaps French designers were just too close to the phenomenon of Structuralism to recognize their own proximity to its concerns. Others recognized the similarity, like the British sculptor and critic Anthony Hill, who

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describes the process whereby gradually anything and everything was subjected to the logic of structures, grammar, and syntax: "when everything is language, then each of the units in the field of knowledge becomes interchangeable, convertible, and fungible, in a vast, functionalist network."[53] In the field of architecture and urbanism, Mark Wigley has perhaps best described this phenomenon as "network fever."[54] He goes so far as to claim that: "the whole obsession with triangulated space frames in the sixties, and even the concern with building systems as such, was just an attempt to make poetic images of the invisible communication infrastructure whose influence had grown throughout the century—a visible aesthetics for the invisible net."[55]

Though Wigley does not concentrate on their work, the French utopians were obsessed with communication, much like their McLuhanite contemporaries around the globe.[56] Like them, they were fascinated by communications and systems theory, and its possible applications to urban space. Here we think of Schöffer's fascination with

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was fascinated by the work of Friedman, and others in the GIAP circle, and their connections to structuralism. See: Anthony Hill, "A Structuralist Art?" *20th Century Studies* vol. 3 (May, 1970), 107-109. This is an important essay that combines a discussion of Moles, Vasarely, and Friedman and compares their theories with that of Lévi-Strauss's definitions. See also, Anthony Hill, ed. *DATA: Directions in Art, Theory and Aesthetics* (Greenwich, CT: New York Graphic Society, 1968). This compilation confirms Hill's fascination with the French context at this time, as it includes contributions form Le Ricolais, Schöffer, Friedman, and Constant, among others.

[53] Ross, *Fast Cars Clean Bodies*, 191.

[54] Mark Wigley, "Network Fever," *Grey Room*, no. 4 (Summer, 2001): 82-122.

[55] Wigley, "Network Fever," 111. Though he captures the obsessive sense of urgency inherent to these concerns, Wigley's claims are far too narrow to be really useful. He stresses only the idea of information transmission, and not any other types of networks—namely the bureaucratic and the industrial (nor does he make any attempt to account for the "poetic" or aesthetic aspects of these images).

[56] Wigley stresses the interactions of Marshall McLuhan, Buckminster Fuller, and the Greek engineer, Constantine Doxiadis.

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cybernetics, as well as Friedman's "comprehensive systems," etc.. But as I have suggested above, the French utopians were distinguished from their international contemporaries by the historical weight of the legacy of the integration of the arts, and by a persistent suspicion regarding the society of consumption (they embraced its means, if not its ends). I would argue that we can see this conflation of aesthetics and cultural critique take form in the discourse on plasticity and ambient space that we have been describing. For Restany, Schöffer, Vasarely, Van Lier, and (albeit in a more problematic way) Moles, architecture could only become a true urban system through a plastic integration that relied upon the effacement of the material and semiotic individuality of everyday objects. Thus objects, which obviously could not be eliminated altogether had to be integrated into the ambient environment.

It was precisely this conflation of the plasticity and semiotics of the object in urban discourse that proved to be one of the major points of contention for cultural critics who sought to engage the work of the French avant-garde. The desire on the part of artists like Schöffer, and theorists like Moles to efface the substantive/signifying particularity of the object in favor of its integration into a larger, ambient system was viewed as indicative of a perverse drive to measure and reduce everything to the same model or system. The Situationists also saw in this tendency the technocratic appropriation of their own theories and methods:

> The latter tendency is integration; the integration of several arts into one another, and the integration of the spectator at any price. First of all, since *Marienbad*, which is the obligatory journalistic citation, one can no longer count all of the works that can exist only 'via the individual participation of the spectator, each one of whom is bound to experience [the work] differently" (Jacques Siclier in *Le Monde*, November 28, 1962, in reference to some televised ballet).[...] One has the integration of Nicolas Schöffer and the Philips Company in an audiovisual climate (the '*mur-creation*'). Finally, a thousand integrations,

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> all across Europe, that are themselves integrated into the ubiquitous biennales that become the Himalayas of integration.[...]
>
> Thus, the 102nd number of the review *L'architecture d'aujourd'hui* is devoted entirely to '*architectures fantastiques*' some projects of which, both old and new, could be quite interesting. But, as it happens, only the S.I. holds the key to their interesting application. In the hands of the scribblers [*barbouilleurs*] of *L'architecture d'aujourd'hui*, they serve only to decorate the walls of passivity. The director of this review [André Bloc], for example, in his own activity as an artist, if one can use that word, has tried nearly every genre of the fashionable sculptors, imitating them to the point of making exact copies [*à s'y méprendre*], which appears to have conferred upon him a confirmed authority in matters of the plasticity of conditioning [*plastique du conditionnement*]. If people such as this have now realized that it is necessary to ameliorate décor, they do so, like all reformists, in order to counter the even stronger pressure of the absorption of speed. These *responsables* of today really want to think about reforming décor, but without having any effect on the life that one leads there [in the reformed environment]. And they coldly refer to these investigations as 'systems' so they might be sheltered from any conclusion that might be drawn from them, which extends beyond their scope.[57]

I have invoked this passage for two reasons: one, it provides us with a concrete example of a Situationist critique of the very individuals with whom we are concerned (Schöffer, and the architects appearing in *L'architecture d'aujourd'hui* no102), and because it signals the high ideological stakes of avant-garde aesthetic concerns during the period. From the Situationist point of view, and later from that of Utopie and Baudrillard (not to mention architectural critics such as Tafuri), alignments were being formed. Abstract painting, the New Novel of Robbe-Grillet, the films of Godard, and the avant-garde architecture being presented in *L'architecture d'aujourd'hui*, etc., were being grouped together, and placed in the same ideological camp that Structuralism would be around 1968. This camp was considered reactionary, and allied with the technocratic forces of the Fifth Republic.[58] More specifically, however, the Situationists were attacking the strategy of integration as a mirror or a tool of commodification and reification, only in its

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[57] "Avant-garde de la presence," excerpts, 14-17.

[58] See Ross, *Fast Cars, Clean Bodies*, 191.

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insistence on integrating the perceiver or audience, this industrial logic was being applied to human perception and experience itself.

Nobody went further in describing the way in which the post-industrial drive to "integrate" was attached to the modern legacy of design than Lefebvre's student, Jean Baudrillard. But, of course, Baudrillard was a bit of an integrationist himself—he felt it was not only possible, but necessary to incorporate the lessons of Structuralism and semiotics into the Marxism of influential figures like Lefebvre and Lukacs. The result was a distinctive theoretical method that allowed Baudrillard to tap into the specific problems of the society of the spectacle during the late sixties. Two early texts in particular are important to us here in this regard[59]: The essay "Design and Environment,"(c. 1972) and Baudrillard's first book, *Le système des objets* (1968).

Baudrillard's work is the most important to us here because he, more so than anyone else, fully articulates the theoretical connections between the object, and the system of signification to which it was connected. Furthermore, he assigns great importance to the *designed* object, over and above the simple industrial product. For him, modern design commits a final extrication of the object from its use value into a pure semiological functionalism. Baudrillard locates this historical development with the advent of the Bauhaus:

> Before the Bauhaus there were, properly speaking, no objects; subsequently, and according to an irreversible logic, everything participates in the category of objects and will be produced as such. That is why any empirical classification (Abraham Moles, etc.) is ludicrous. To wonder whether or not a house or a piece of clothing is an object, to wonder where the object begins, where it leaves off in order to become a building, etc.—all this descriptive typology is fruitless. For the object is not a thing, nor even a category; it is a status of meaning and form. Before the logical advent of the object form, nothing is an object, not even

[59] But for the necessity of brevity, I would also want to include here the entirety of Baudrillard's essays in the short-lived avant-garde journal *Utopie*.

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> everyday utensils—thereafter, everything is, the building, as well as the coffee spoon or the entire city.[60]

He quickly concludes that the goal of the integrative design impulse requires an artificial separation of the two fundamental components of the object—utility and aesthetics—only to then disingenuously propose their reunification:

> Such is the ideological function of design: with the concept of the 'functional aesthetic,' it proposes a model of reconciliation, of formal surpassing of specialization (division of labor at the level of objects) by a universally enveloping value. This it imposes a social scheme of integration by the elimination of real structures. The functional aesthetic that conjugates two abstractions is thus itself nothing more than a superabstraction that consecrates the system of sign exchange value by delineating the utopia behind which the latter dissimulates. The operation of the sign, the separation of signs, is something as fundamental, as profoundly *political*, as the division of labor.[61]

Although he identifies the Bauhaus as the origin of this phenomenon, Baudrillard quickly brings his analysis to bear on more contemporary developments:

> Presently, art limits itself to a kinetic or lumino-dynamic manipulation, or to the psychedelic staging of a flaccid surrealism—in short, to a combinatory, which is the very image of that of real systems, to an aesthetic operationality (whose biblical specimen is the 'New Artistic Spirit' of Schöffer), which is in no way distinguished from that of cybernetic programs. The hyper-reality of systems has absorbed the critical surreality of the phantasm. Art has become, or is on the way to becoming, total design, *metadesign*.[62]

Besides belying an extremely limited and local knowledge of artistic production in the late sixties, Baudrillard demonstrates here the way in which a new type of Marxist criticism, inspired by Debord and Lefebvre, and derived at least partially from

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[60] Baudrillard, "Design and Environment or How Political Economy Escalates into Cyberblitz," in *For a Critique of the Political Economy of the Sign*, trans. Charles Levin (Telos Press, 1981), 185.

[61] Baudrillard, "Design and Environment," 189.

[62] Baudrillard, "Design and Environment," 189.

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Structuralism itself, could be brought to bear on the contemporaneous discourse of artistic and urban integration.[63]

It was in *The System of Objects* that Baudrillard did this most unequivocally. This 1968 text is essentially an extended critique of the consumer society, but rather than a simple condemnation of the latter's shallowness, the text is a quasi-scientific analysis of the structural properties of commodity fetishism at the dawn of the post-industrial world. For Baudrillard, it was necessary to view, not just individual commodities, but the entirety of the network of commodities as a kind of language. Accordingly, just as in the Saussurian view of language, individual elements were only significant insofar as they related to other elements in the system or structure. As in "Design and Environment," Baudrillard maintained that it was modernist design that provided this structure, via its ideological splitting of the aesthetic properties of the thing and its function. But he goes further in *The System of Objects* by describing in detail the ramifications of this split.

In what I would argue is the most important chapter in the book, Baudrillard addresses the "Structure of Atmosphere."[64] We have, of course, been very much concerned in the present chapter with atmospherics—with spatial ambience—and Baudrillard addresses these same concerns, but takes them further into the realm of culture. Here he points out that what have traditionally been considered the most ephemeral aspects of objects—color, materials, etc.—in fact form the atmospheric

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[63] On the complex relationship between Marxism and Structuralism at the end of the sixties, see Dosse, *History of Structuralism*, vol. II, 88-111.

[64] Baudrillard, *System of Objects*, 30-62.

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structure of their communicability. In other words, atmosphere ("the calculation of materials, forms, and space[...]"[65]) is the grammar of design objects in the environment.

Atmopshere, for Baudrillard, is essentially the ideological equivalent of ambience, as understood by Restany, Schöffer, et al.. The same terminology is used: gesture, interactivity (or manipulability), system, and structure. Of course, Baudrillard goes beyond the Structuralism/phenomenology paradox that I described above and asserts that atmosphere governs the politics of everyday life and consumption in a profound sense. In a later essay, and one of Baudrillard's most famous, he brings these analyses to bear directly on architecture, and specifically on the recently-completed Centre Pompidou, known as Beaubourg.[66] For Baudrillard, the new museum and cultural center was, precisely, an empty center; it was the vanishing point of culture, where cultural values and social relations were sucked in, reproduced, and replicated in a de-politicized, neutered form: "a monument to mass simulation effects, the Centre functions like an incinerator, absorbing and devouring all cultural energy, rather like the black monolith of *2001*—a mad convection current for the materialization, absorption, and destruction of all the contents within it."[67]

Of course, in the history of modern architecture, the Centre Pompidou holds a similarly paradoxical position—it is both a condensation of the space-framed megastructuralist tendencies of the sixties, and their postmodern parody, with its absurd and over-determined vents and pipes (and its failure to successfully implement a

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[65] Baudrillard, *System of Objects*, 30.

[66] Jean Baudrillard, *L'effet beaubourg* (1977), trans. as "The Beaubourg Effect: Implosion and Deterrence," Rosalind Krauss and Annette Michelson, *October* 20 (1982): 3-13.

[67] Baudrillard, "The Beaubourg Effect," 3.

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"flexible" partition system). The competition for the project was held in 1970-1971. Stylistically, Beaubourg was an amalgamation of modernist technotopias, from Oscar Nitzchke's *Maison de la Publicité* (1932-1935), to later schemes like Cedric Price's *Fun Palace* (1961-1965) and various works by Archigram. Friedman's work must have also been a source, because of the obvious formal similarity and the dissemination Friedman's designs in journals published across Europe (including England). But Rogers and Piano's winning entry also represented the end of the megastructural culture of the sixties, and more pointedly, it represented a foreign victory over many French submissions.[68] Several GIAP members (including Friedman) had submitted proposals [Figs. 5.7, 5.8, 5.9]. These seem fanciful at best, and represent the confusion and diversity of the French context at this time as opposed to a unified tendency, but they are united in their obvious failure to embrace pop imagery, which the winning entry did very clearly.

Like Beaubourg itself, Baudrillard's essay is itself kind of a link between the theoretical concerns of the sixties (systems and semiotics) and the postmodern eighties (cultural signification, etc.). In other words, it is about the formal structure of networks, but also the *content* of the information they carry. Baudrillard turns these concerns into a cultural and ideological equation. For him, Beaubourg is a microcosm of "all social relations,"[69] and it is the opposition between the technological aspects of the structure and the cultural aspirations of its contents that reproduce these relations. So which is it: was

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[68] For a narrative of the competition and construction, see: Nathan Silver, *The Making of Beaubourg* (Cambridge: MIT Press, 1994).

[69] Baudrillard, "The Beaubourg Effect," 4.

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Beaubourg meant to circulate or to signify? The answer is, of course, both. For Baudrillard, neither of these goals comes to fruition, and the tensions produced by the contradiction demonstrates the impotence of both the technical project (circulation) and the cultural one (signification, art, etc.). As soon as the structure of Beaubourg is activated through its "visibility, [...] transparency, [...] polyvalency, [...] consensus and contact [...]"[70] its atrophy becomes apparent. Accordingly, as soon as it attempts to achieve its cultural project of bringing high art to the masses, it reveals that there can no longer be a true culture in a society governed by the logic of circulation and exchange: "A body entirely composed of flux and surface connections chooses for its content the traditional culture of depth. Thus, an anterior order of simulacra (the one of meaning) now supplies the empty substance of a later order: one which no longer even recognizes the distinction between signifier and signified, between container and contents."[71]

Of course, this conflation of or conflict between signifier and signified (or form and content[72]) was nothing new. It is analogous to the other dyad with which we have been dealing in this section: that of structure versus phenomenological or ambient effects in urban space. In a sense, French Spatial utopianism had been dealing with these two paradoxes all along (or at least attempting to suppress them). The Spatial Urbanists' fetishization of the topological structure was, in the end, simply an attempt to appropriate the signifying function of urban space, and to deliver it to an idealized inhabitant, one

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[70] Baudrillard, "The Beaubourg Effect," 4.

[71] Baudrillard, "The Beaubourg Effect," 6.

[72] Sheila Faria Glaser uses the terms "form" and "content" in her translation of the same article by Baudrillard: "The Beaubourg Effect: Implosion and Deterrence," in *Simulacra and Simulation* (Minneapolis: University of Michigan Press, 1994), 64.

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who would "produce" the meaning or content of the urban structure or network, either by constructing their own spaces (Friedman) or cybernetically manipulating spatial ambiences (Schöffer, et al.). Moles describes this space as one constructed via the "structuralist" or distant view, and experienced on the intimate level as an urban "labyrinth" filled with an excess of energy, dissipated via the interactivity of the individual.

Baudrillard's recognition of a similar dynamic (albeit utterly ineffectual) at Beaubourg is uncannily insightful, and one suspects that it would have been inconceivable without his familiarity with the French avant-garde of the 1960s.[73] So, too, his own suggestions for an alternative program to the Centre Pompidou betray his debt to the utopias of the previous decade:

> And yet...and yet...if Beaubourg really had to contain something, it should be a labyrinth, a library of infinite permutations, a game or a lottery for the chance reparceling of destinies—in short, a Borgesian world, or better still, a Circular Ruin: a linkage of individuals each dreamed by the other (not a Disneyland of Dream, but a laboratory of practical fiction)[...] simply, then, a culture of simulation and fascination, and no longer a culture of production and meaning.[74]

Is this not the very urban labyrinth with which the French utopians were obsessed? Doubtless, Baudrillard would make important ideological distinctions, but it seems ironic nonetheless that his description of an alternative to Beaubourg is taken directly from its own sources—from the works of Friedman, Constant, Archigram, (not to mention Lefebvre), etc.. But of course, Baudrillard is careful not to attribute a formal structure to

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[73] I am referring here, not only to Baudrillard's criticism of Schöffer and Moles, but to his participation in the group Utopie.

[74] Baudrillard, "The Beaubourg Effect," 6.

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his labyrinth—he refers us to the literary example of Borges, and never attempts to describe the spaces of his "laboratory of practical fiction."

In the end, Baudrillard identifies the *structure* of Beaubourg as its weak link, susceptible to mass sabotage: "MAKE BEAUBOURG BUCKLE! A new revolutionary slogan. No need to torch it or to fight it; just go there! That's the best way to destroy it. Beaubourg's success is no mystery; people go there *just for that*. The fragility of this edifice already exudes catastrophe, and they stampede it just to make it buckle."[75] Thus, for Baudrillard, it is finally a matter of attacking the physical aspect—the form or structure—of the Centre Pompidou in order to dismantle its cultural project, or its content. He calls for a visceral response to the impossibly light and transparent space frame that serves as the physical platform for the flux of people, art, and commodities in the heart of Paris.

[75] Baudrillard, "The Beaubourg Effect," 9.

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Illustrations

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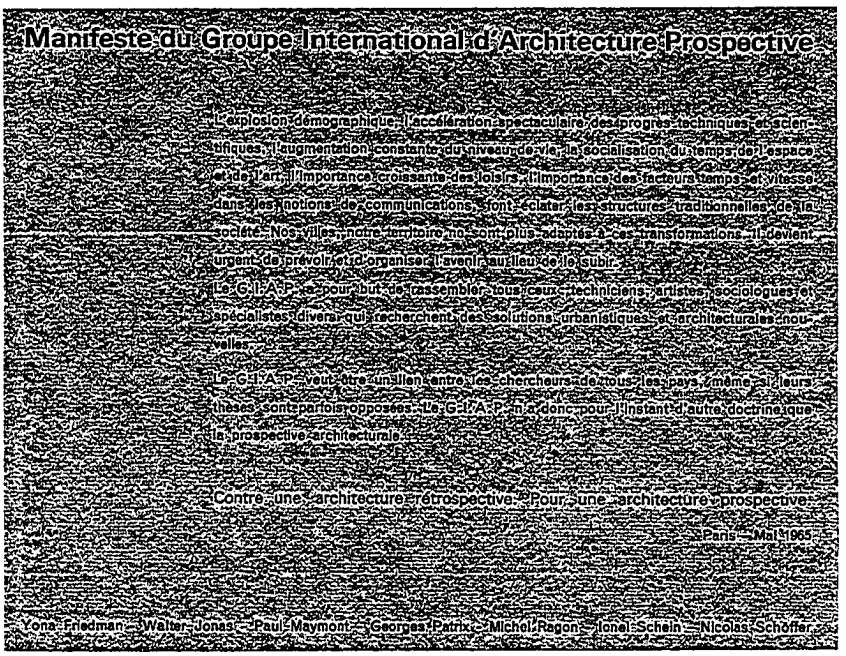


Figure 1.1. Manifeste du GIAP, original flyer (1965).

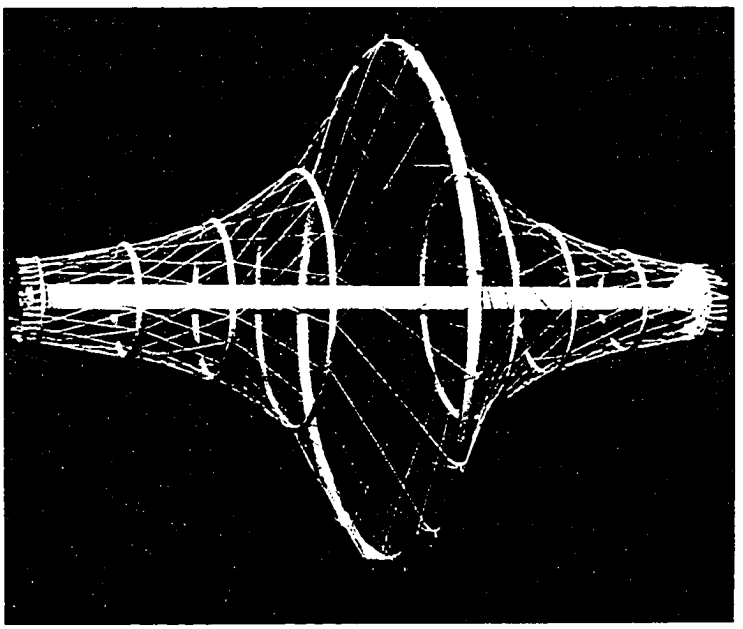


Figure 1.2. Robert Le Ricolais, *Sturctural model* (c. 1960).

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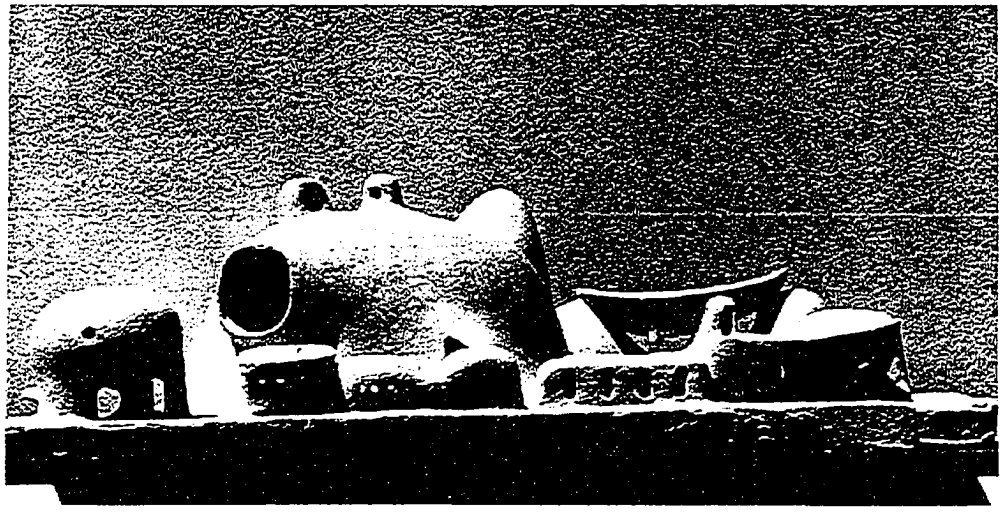


Figure 1.3. Pierre Szekely, *Maison-sculpture* (c. 1965)

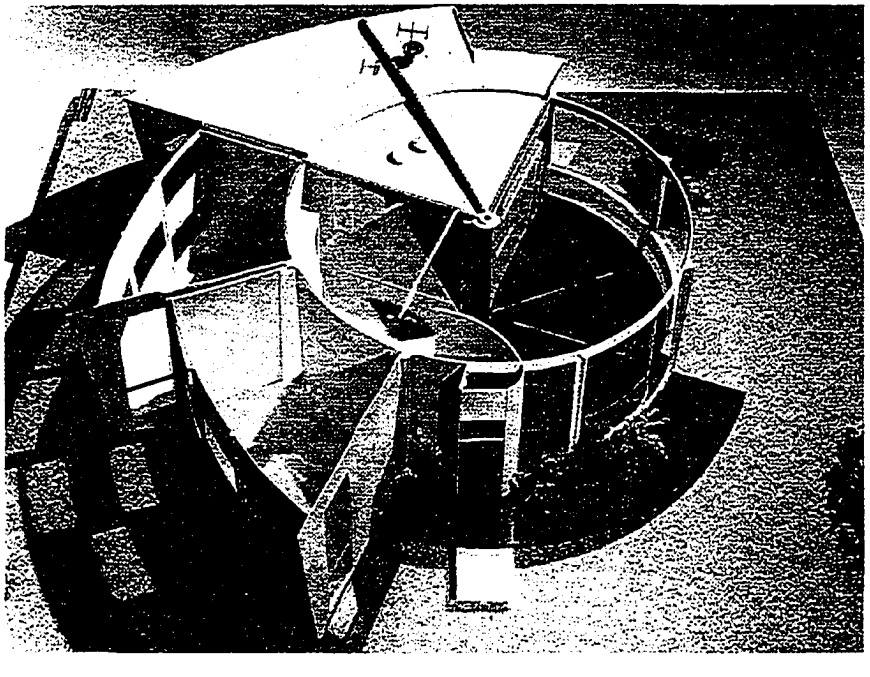


Figure 1.4. Ionel Schein, *Maison en Plastique*, model (1956)

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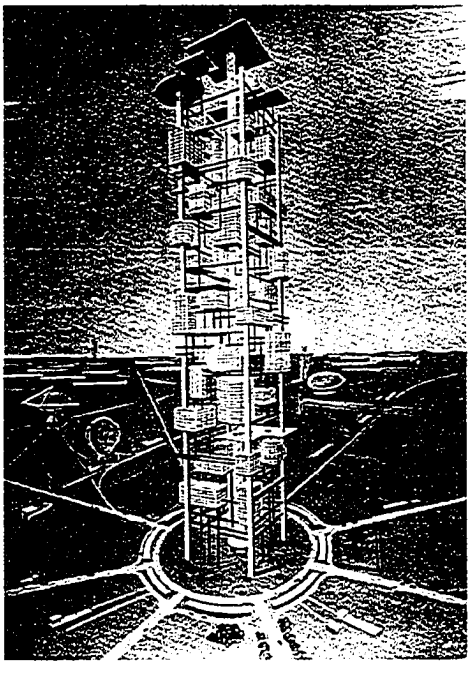


Figure 1.5. Nicolas Schöffer. *Centre universitaire vertical: Ville Cybernétique* (c. 1961)

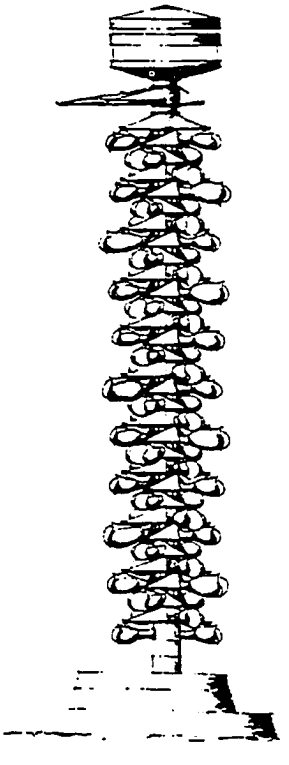


Figure 1.6. Arthur Quarmby. *Corn on the Cob* (1963).

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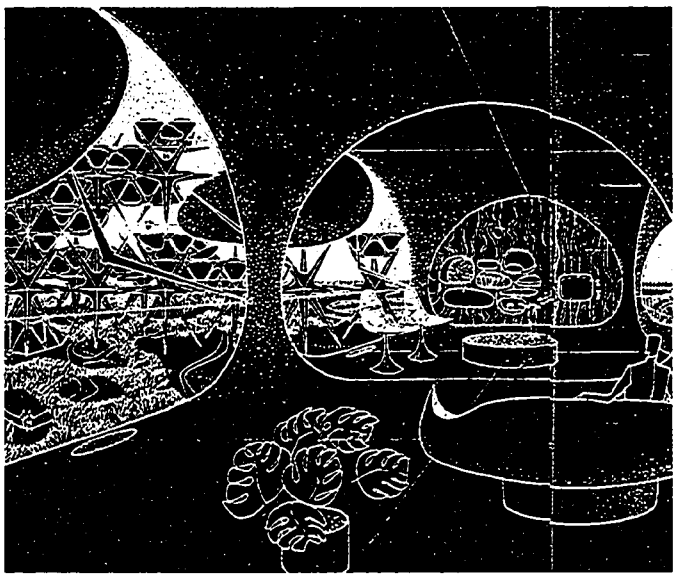


Figure 1.7. Chanéac, *Living Cell*, interior view (c. 1964)

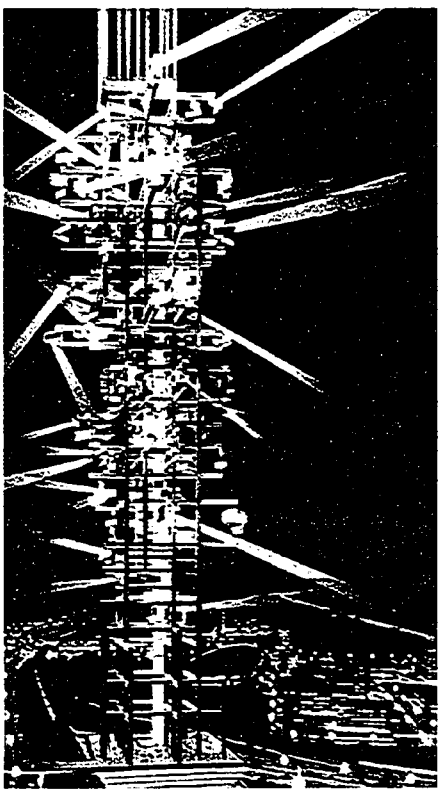


Figure 1.8. Nicolas Schöffer, *Tour Lumiere Cybernétique*, detail (c. 1961)

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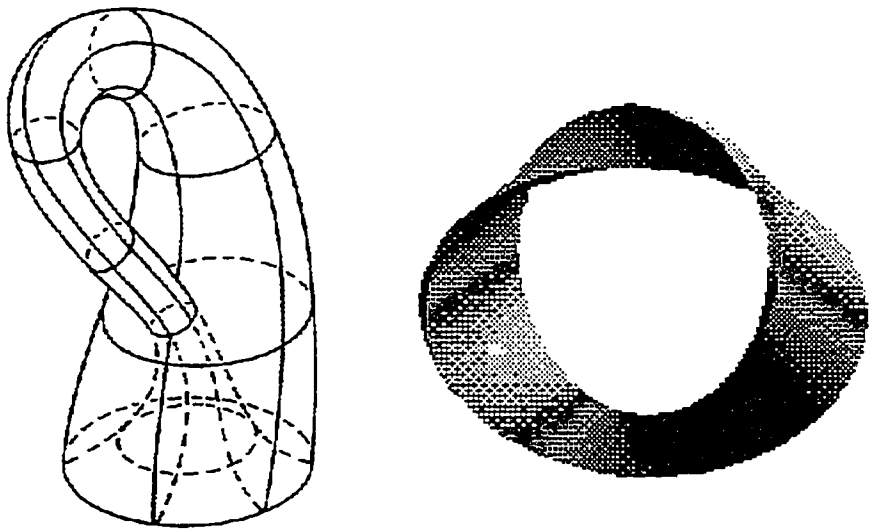


Figure 1.9. Topological figures: Klein Bottle and Moebius Strip.



Figure 1.10. Pascal Hausermann, plastic house, Haute-Savoi (c.1962)

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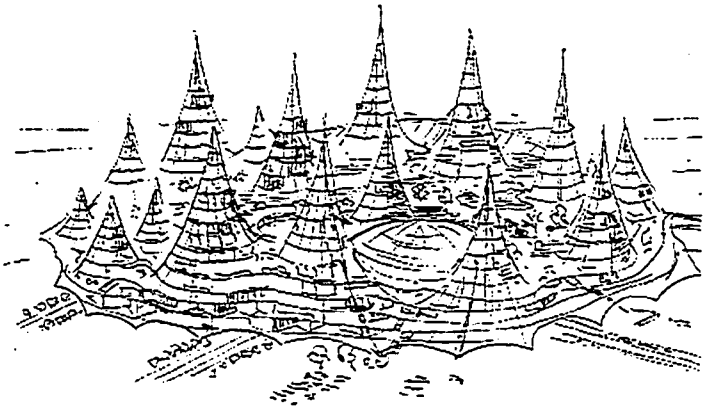


Figure 1.11. Freï Otto. *Suspended City Project* (1960).

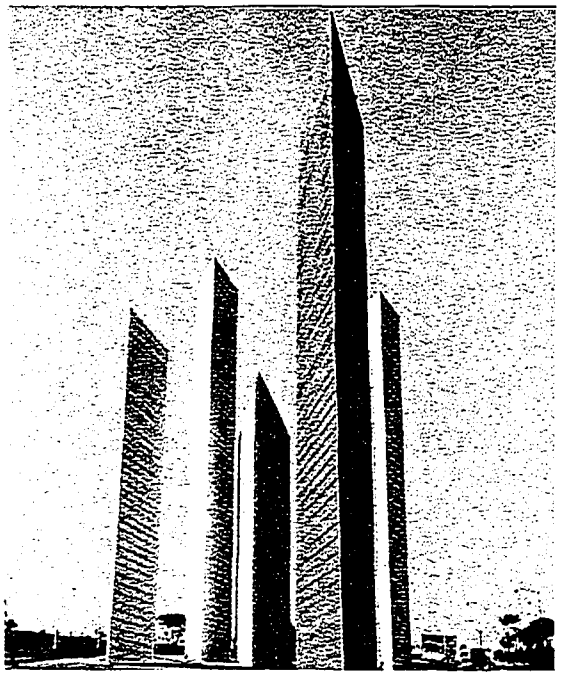


Figure 1.12. Mathias Goeritz and Luis Barragán. *Satellite City Towers*. Mexico City (1957).

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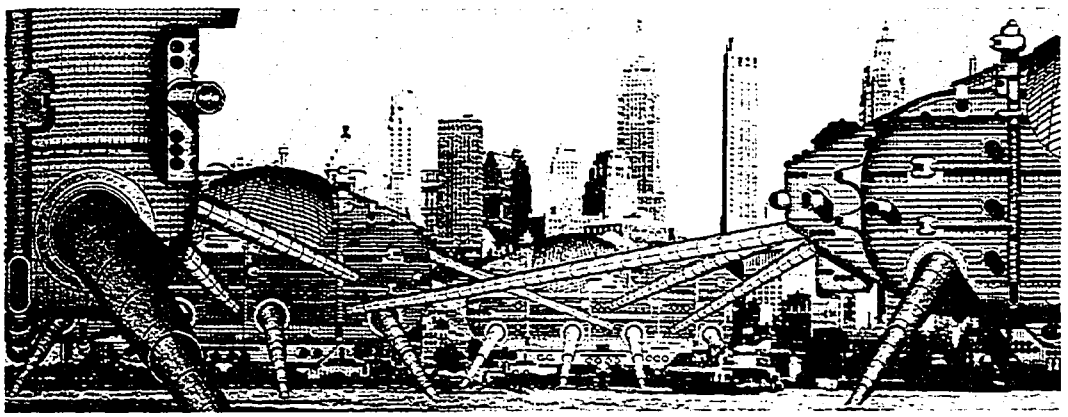


Figure 1.13. Ron Herron, *Walking City* (1964)

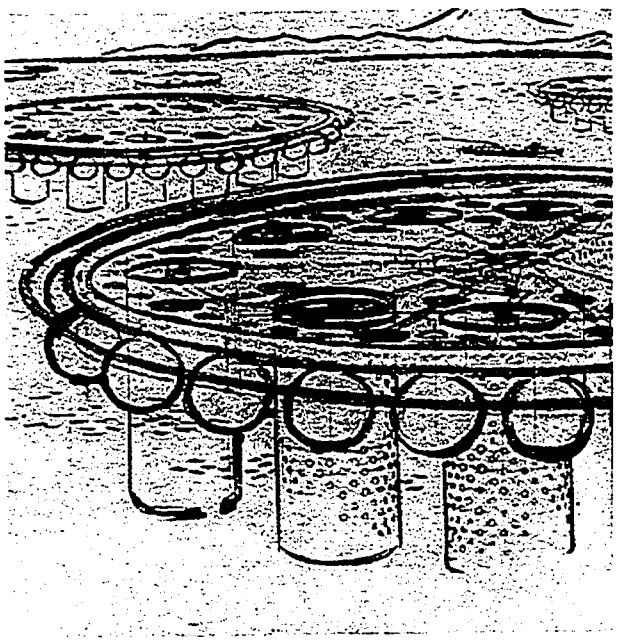


Figure 1.14. Kiyonari Kikutake, *Marine City* (1958)

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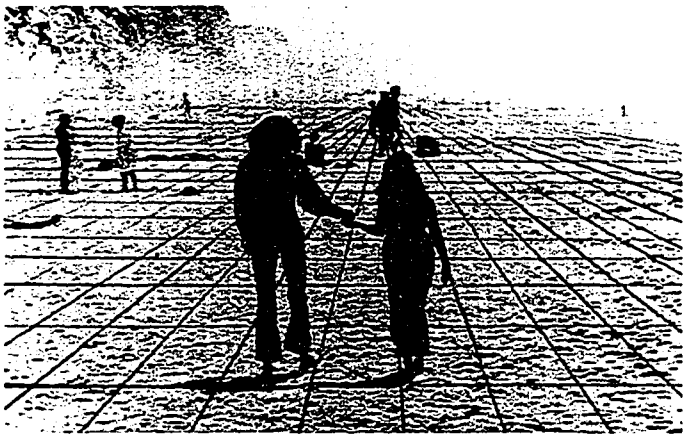


Figure 1.15. Superstudio. *A Journey from A to B* (1969).



Figure 1.16. Pierre Restany. *Superlund* (1967).

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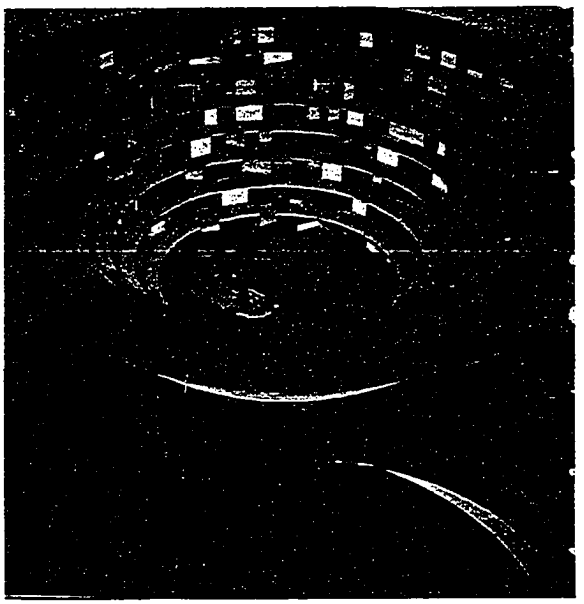


Figure 1.17. Walter Jonas.*Intrapolis* (c.1965)

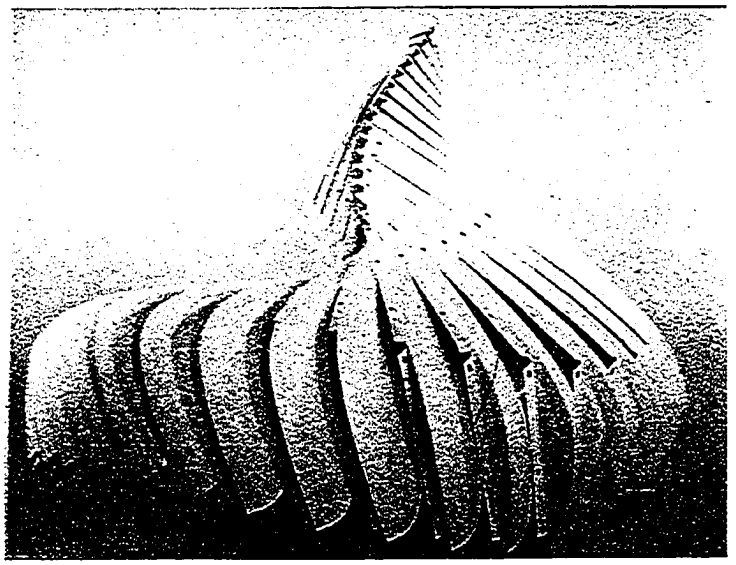


Figure 1.18. Arman.*Le murex (Accumulation. Renault no.103) (1967).*

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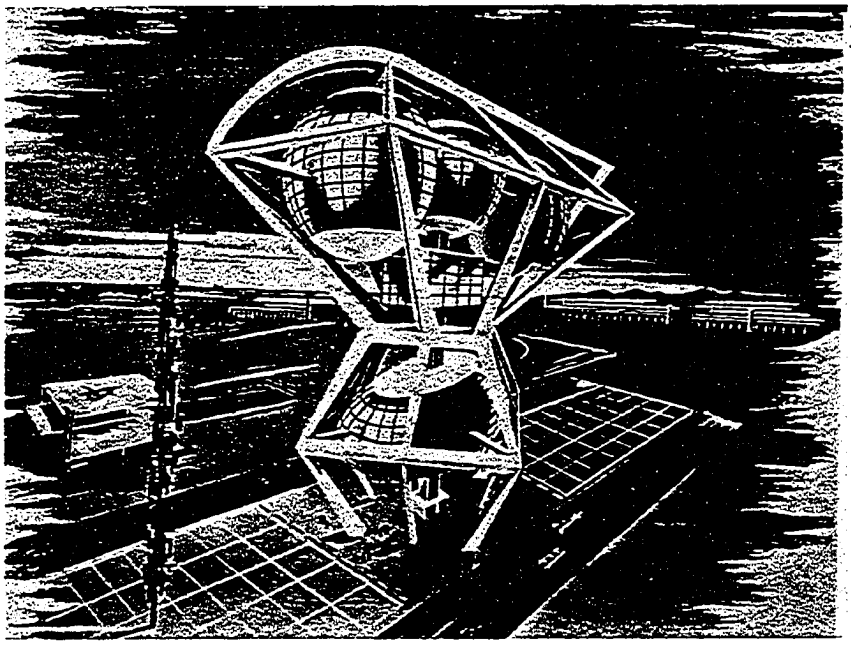


Figure 1.19. Nicolas Schöffer. *Centre de Recherche Scientifique* (c. 1961)



Figure 1.20. Paul Maymont. *Ville Flottante* (c. 1961)

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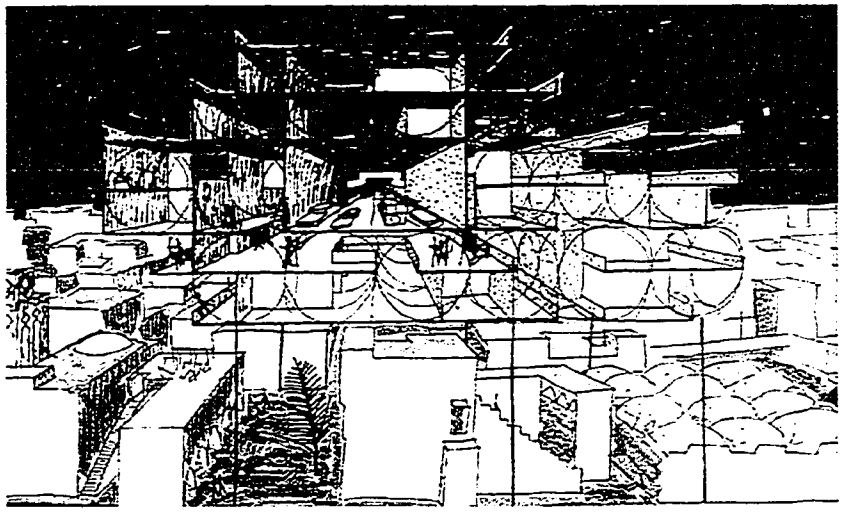


Figure 1.21. Yona Friedman. Spatial project for Tunis (1960)

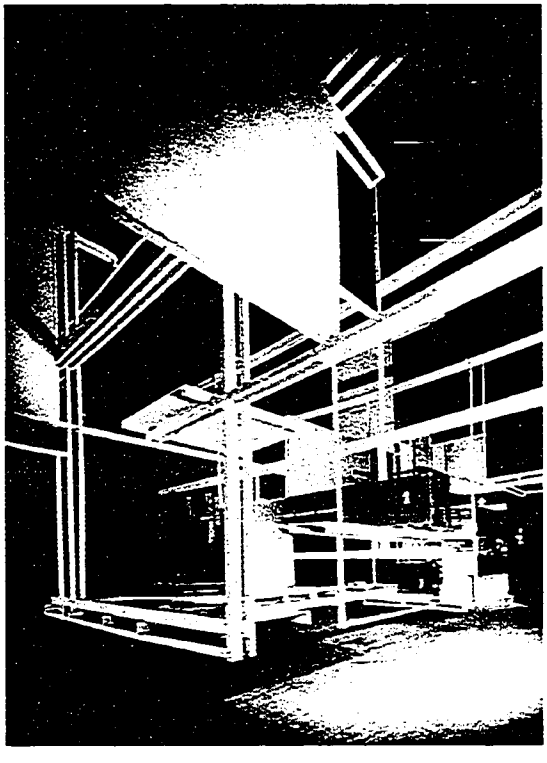


Figure 1.22. Frederick Kiesler. *City in Space* Paris, Grand Palais (1925).

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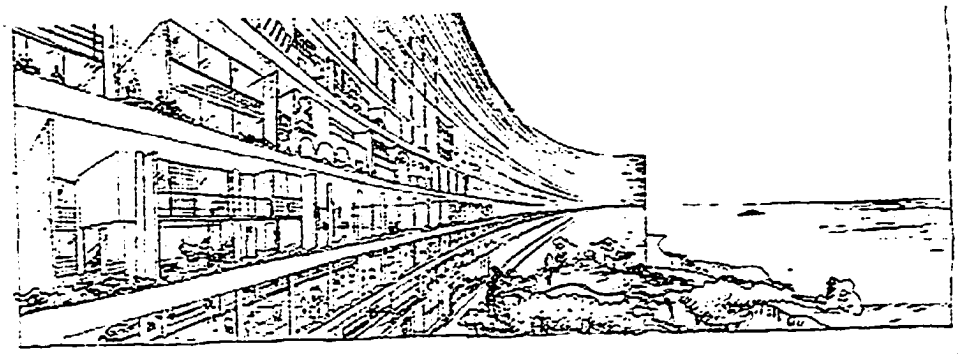


Figure 1.23. Le Corbusier. *Fort l'empereur* project for Algiers (1931).

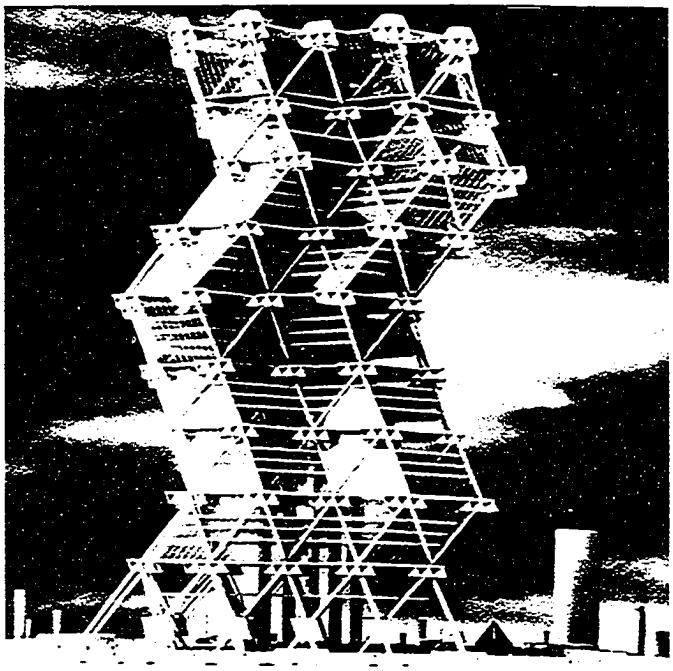


Figure 1.24. Louis Kahn and Ann Tyng. *City Hall* project (1958)

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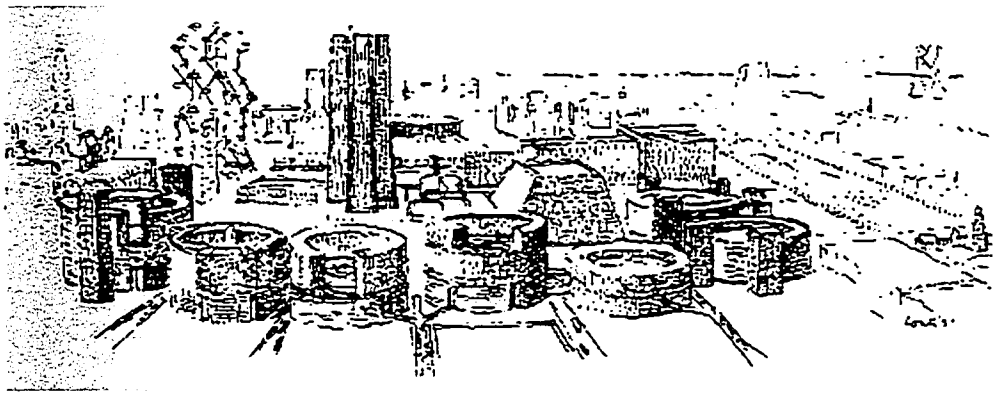


Figure 1.25. Louis Kahn. *Center City Philadelphia* project (1952)

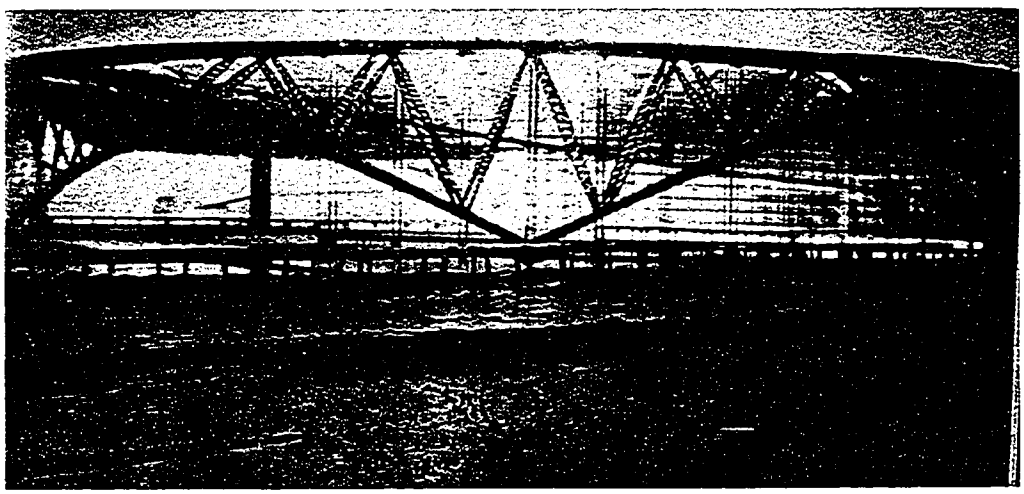


Figure 1.26. Eugène Beaudouin, Marcel Lods, and Vladimir Bodianski. *Exhibition Hall* project (1933).

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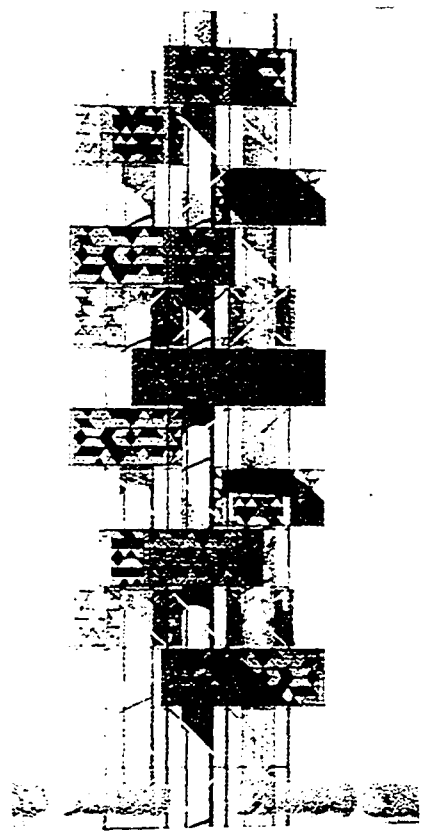


Figure 1.27. Éduard Albert. tree structure project (c.1964).

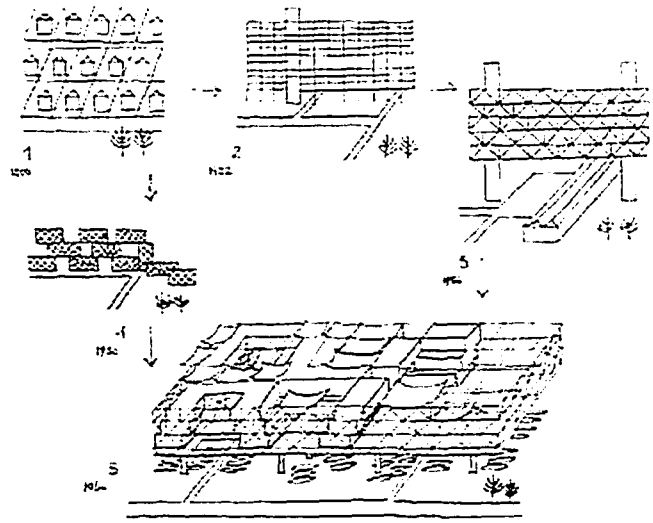


Figure 28. Yona Friedman. *Spatial City* project (1959-60).

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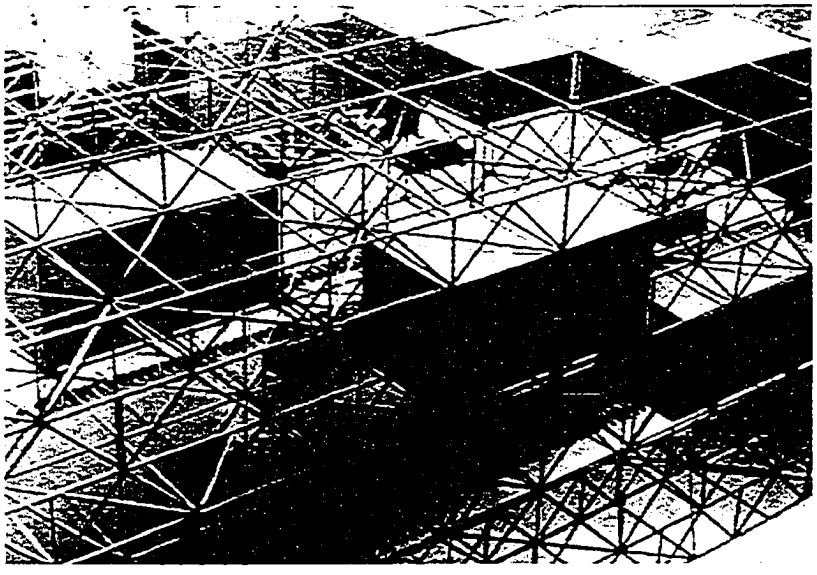


Figure 1.29. Yona Friedman. *Ville pont sur la Manche* [bridge city over the English Channel] project (1963): model constructed in collaboration with Eckhard Schultze-Fielitz.

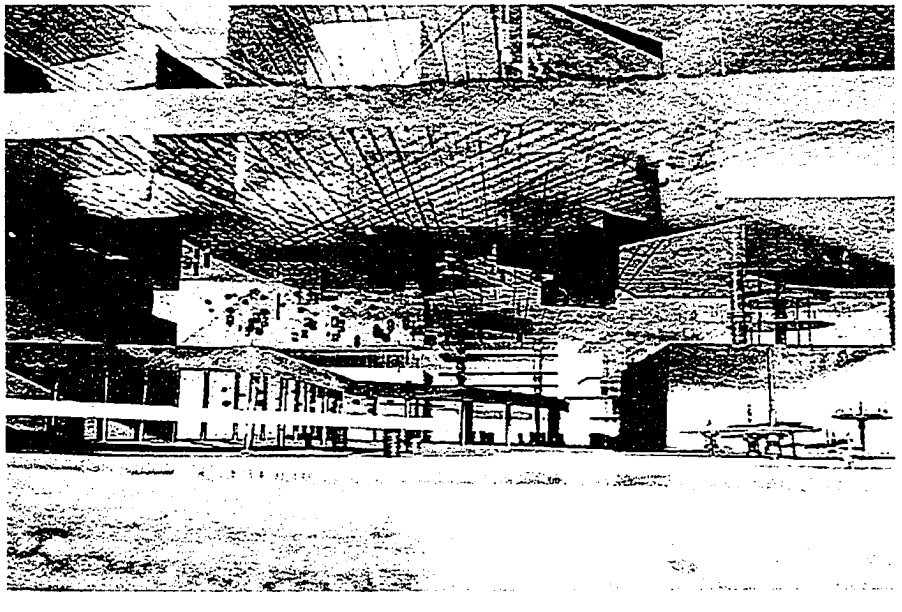


Figure 1.30. Constant. *New Babylon*. model (1959)

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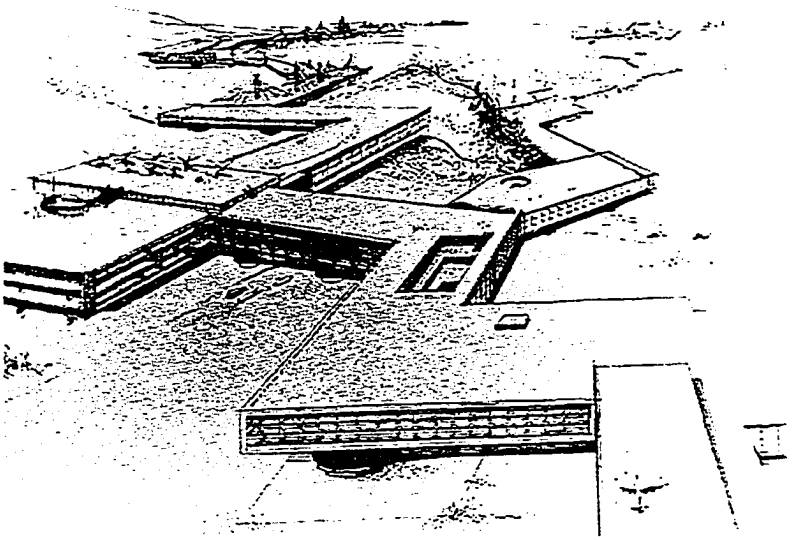


Figure 1.31. Constant. *New Babylon: Group of Sectors seen from above* (1964)

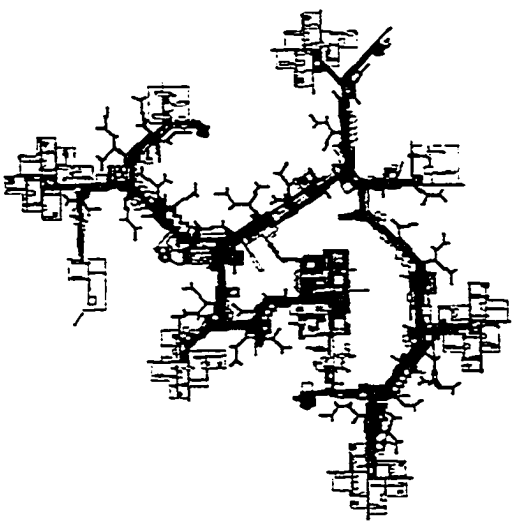


Figure 1.32. Candilis. Josic. Woods. *Toulouse le Mirail* . project (1961).

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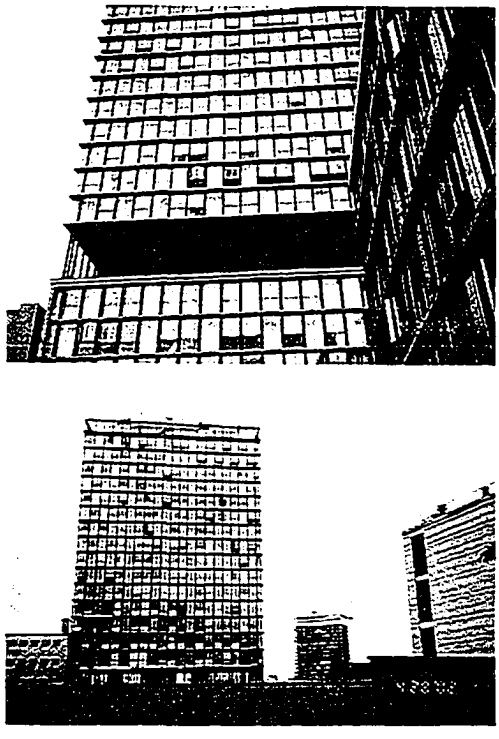


Figure 1.33. Éduard Albert and Roger Boileau. Apartment Building. Paris, rue Croulebarbe (1958-1960); two views, photo Larry Busbea.

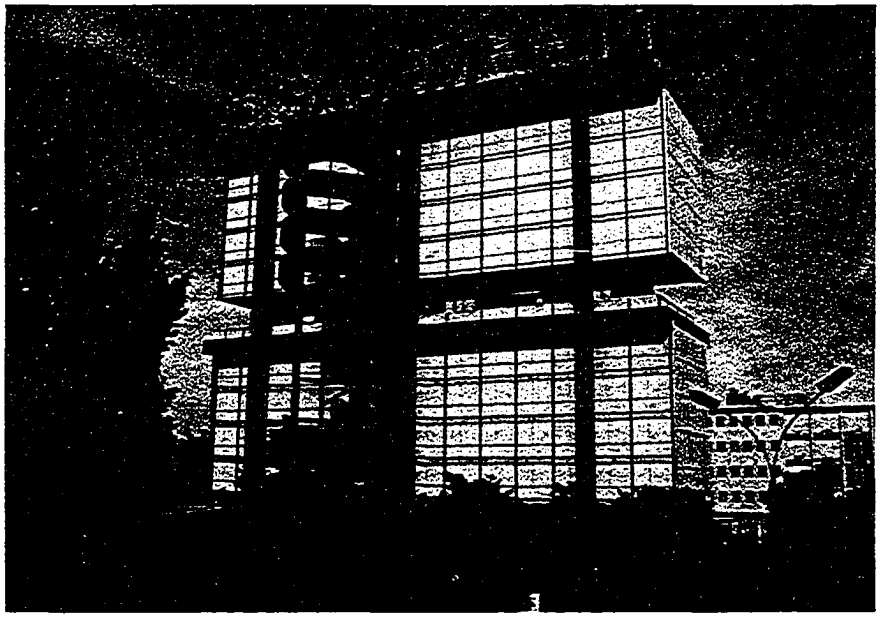


Figure 1.34. Claude Parent, Mossem Forughi, Hedar Ghiai, and André Bloc, *Pavillon d'Iran* [now *Fondation Avicenne*] (1968); photo Larry Busbea

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Figure 1.35. André Bloc, *Pierre Eclatée* [Shattered Stone] (1963).

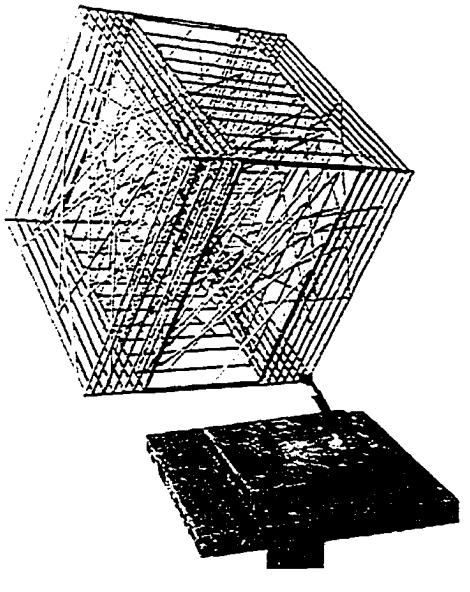


Figure 1.36. André Bloc, *Cage san oiseau* [birdless cage] (1962)

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Figure 1.37. André Bloc. *Sculpture Habiticle II* [habitable sculpture]. Meudon, France (1964); photo Larry Busbea

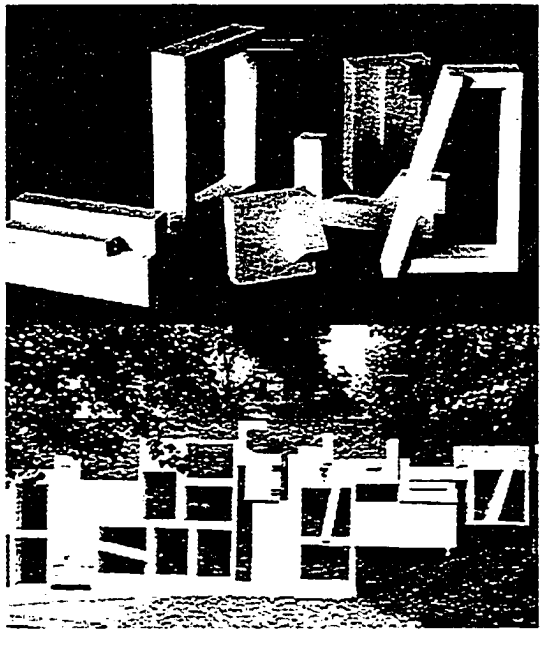


Figure 1.38. André Bloc. *Éléments Typifiés* [type elements] (1963)

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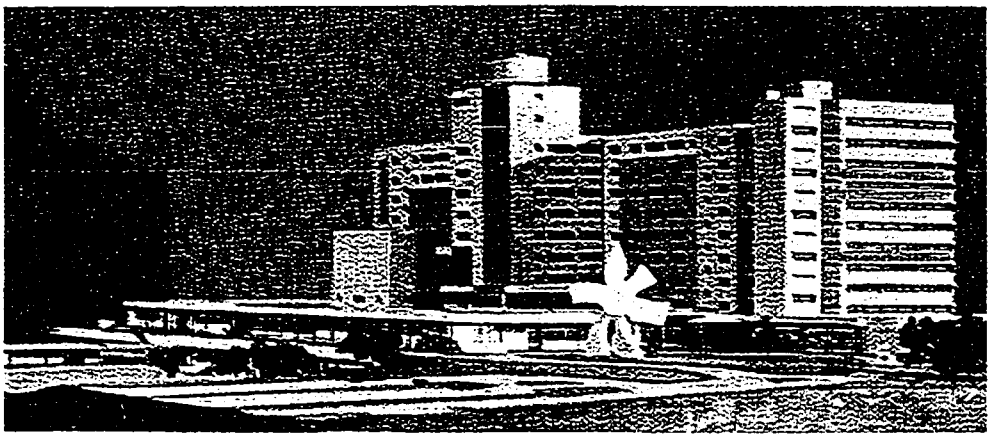


Figure 1.39. Paul Nelson and Fernand Léger. Saint-Lô Hospital. model with color scheme (1949).

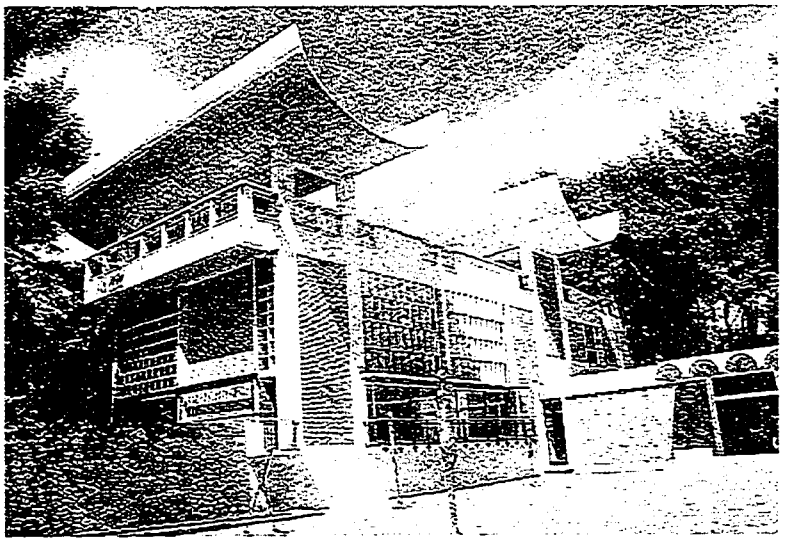


Figure 1.40. José Luis Sert. *Maeght Foundation*. Alpes-Maritime (1964).

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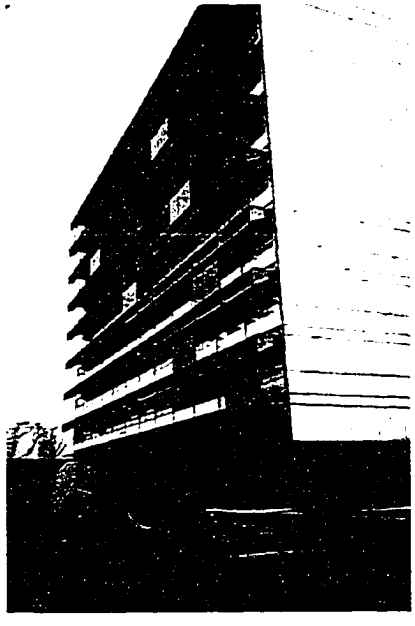


Figure 1.41. André Wogensky, *Necker Hospital Center*, Paris (1968); photo Larry Busbea



Figure 1.42. Jean Ginsberg, Apartment Building, rue du Docteur-Blanche, Paris (1953); photo Larry Busbea

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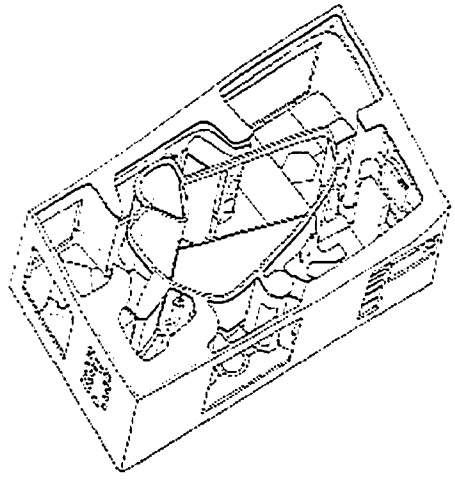


Figure 1.43. Alison and Peter Smithson, *House of the Future* project (1956).

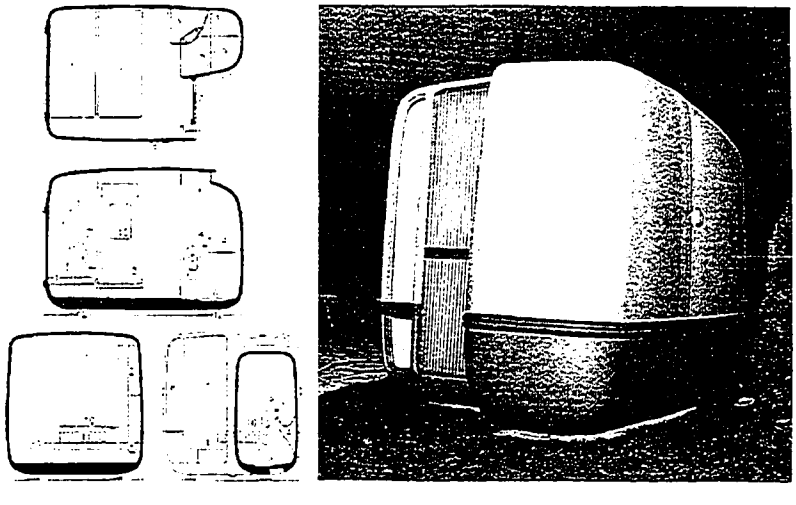


Figure 1.44. Ionel Schein and Yves Magnant, *Mobile Hotel Room Unit* (c. 1956)

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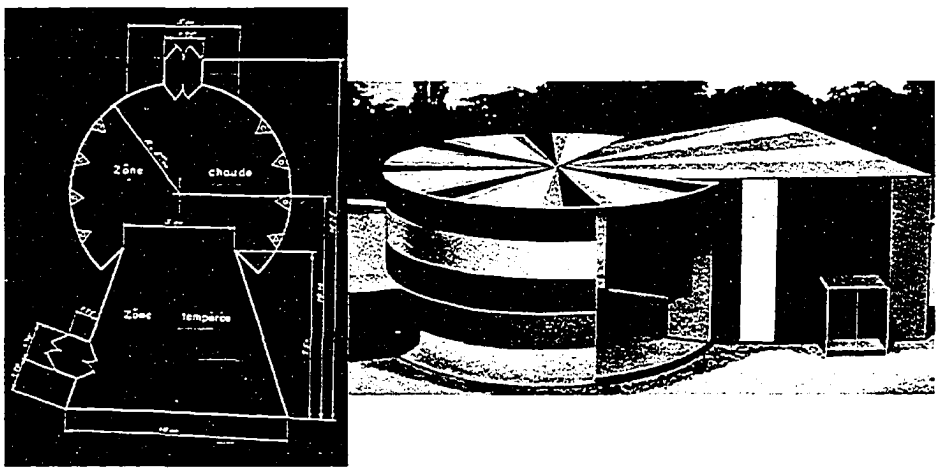


Figure 1.45. Nicolas Schöffer, Maison à Cloison Invisible [house with invisible partitions] (1955): plan/model.

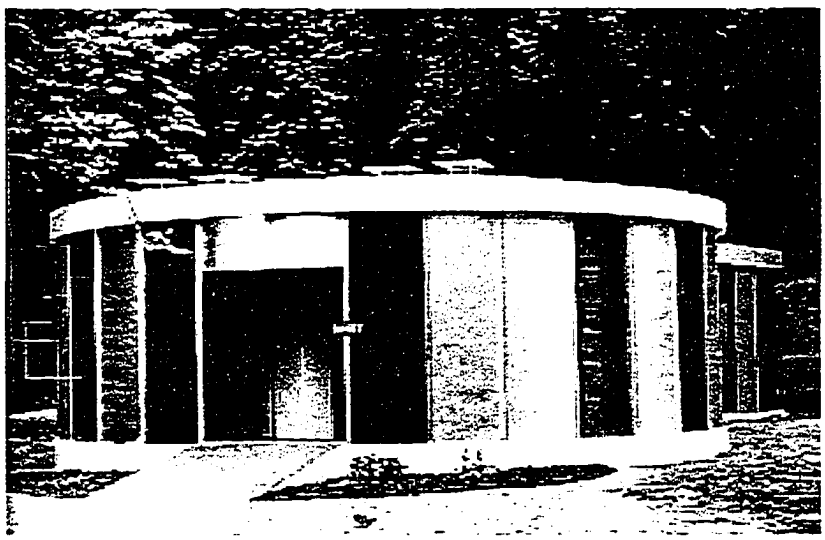


Figure 1.46. Nicolas Schöffer, Maison à Cloison Invisible [house with invisible partitions] (1955): view at the Salon des traveaux publics, Paris, 1957.

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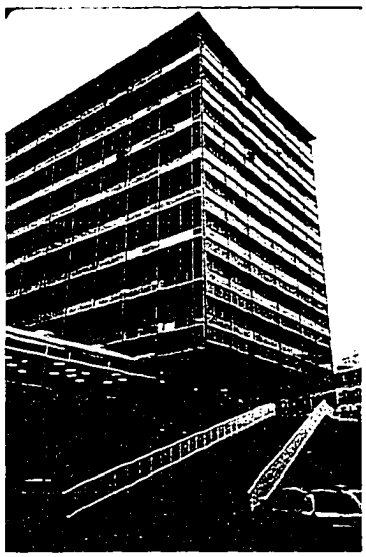


Figure 1.47. Raymond Lopez, *Caisse Centrale d'Allocation Familiales*, rue Viala, Paris (1952-1959): photo Larry Busbea.

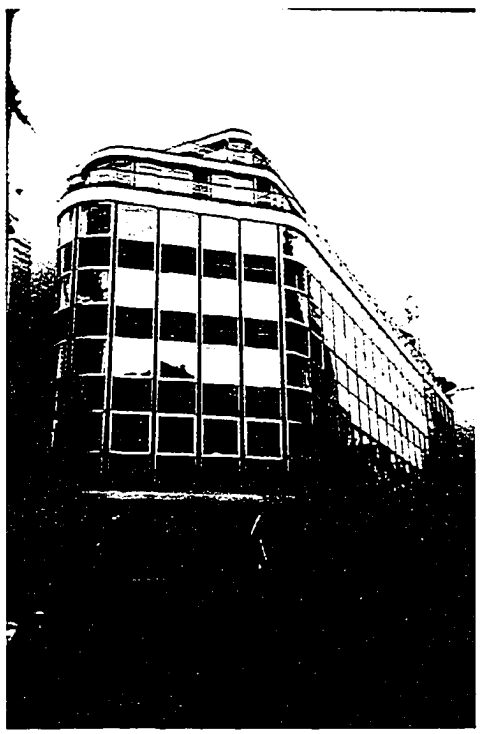


Figure 1.48. Jean Balladur, office building, rue de la Victoire, Paris (1958): photo Larry Busbea

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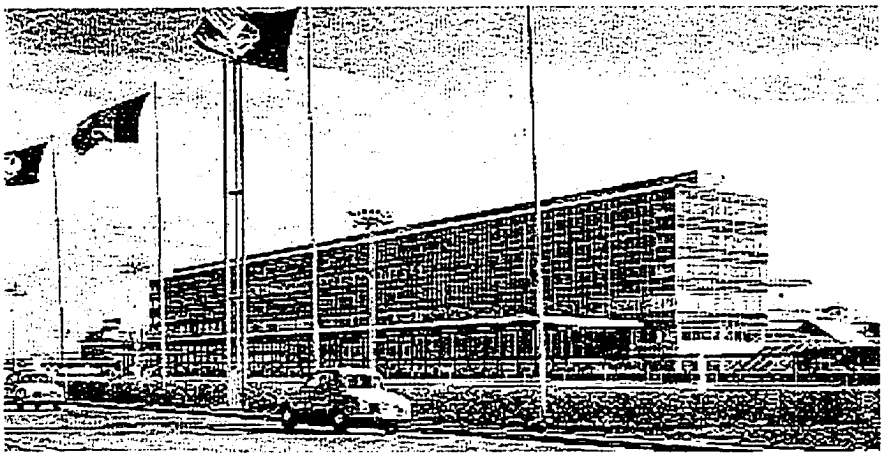


Figure 1.49. Henri Vicariot, new terminal at Orly (1956-1961).

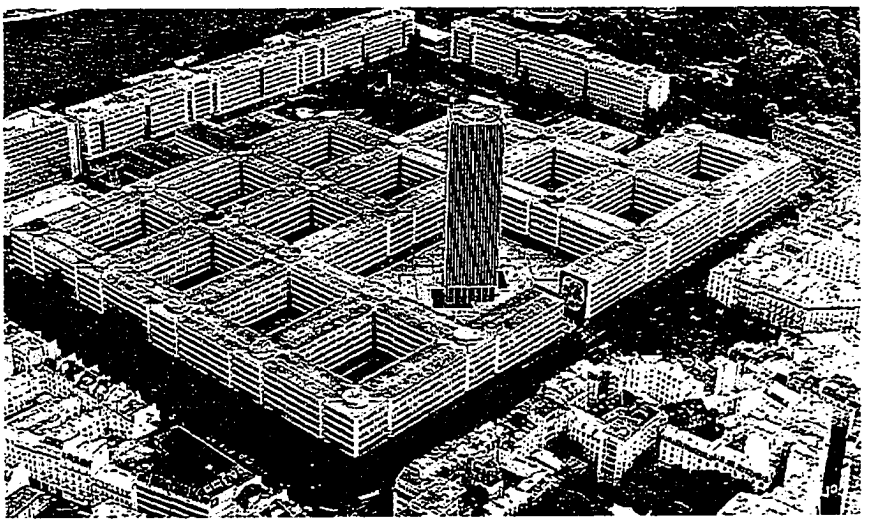


Figure 1.50. Éduard Albert,et al., Jussieu Faculty buildings, Paris (1965)

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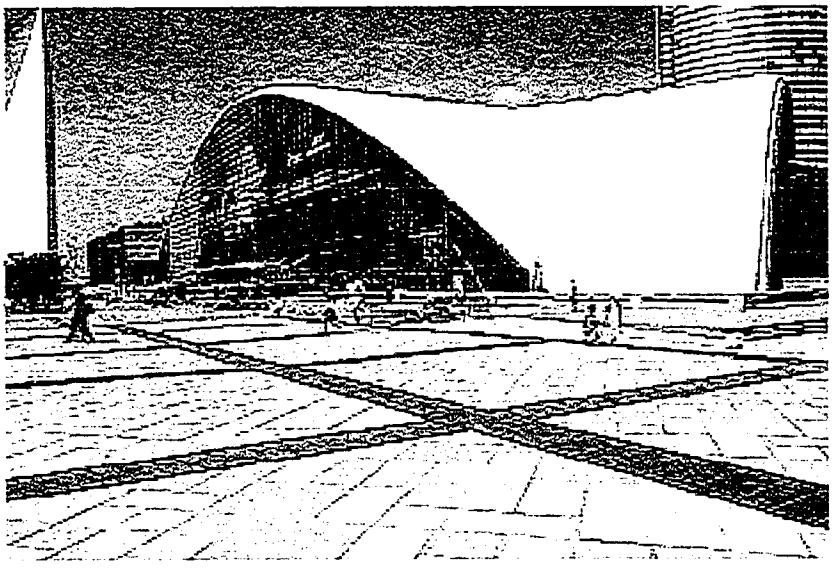


Figure 1.51. Robert Camelot, Jean de Mailly, Bernard Zehrfuss, et al., *Palais du CNIT*, Paris, La Defense (1953-58)

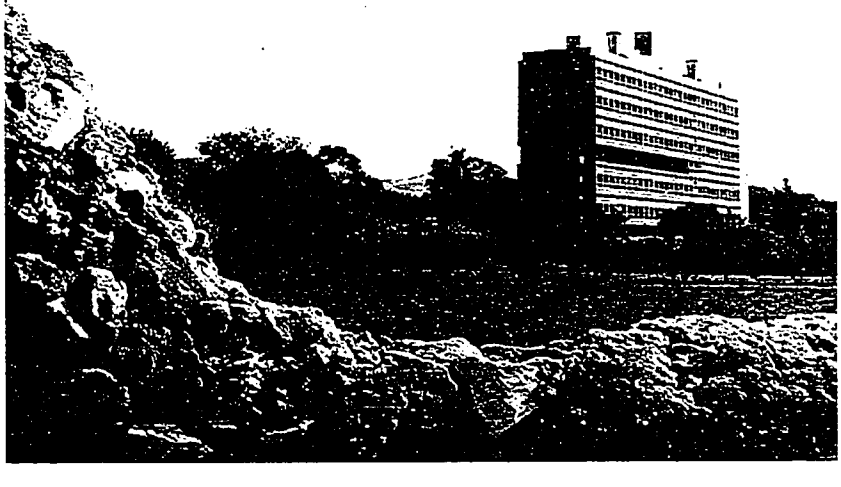


Figure 1.52. Le Corbusier, *Unité d'Habitation*, Marseilles (1945-52).

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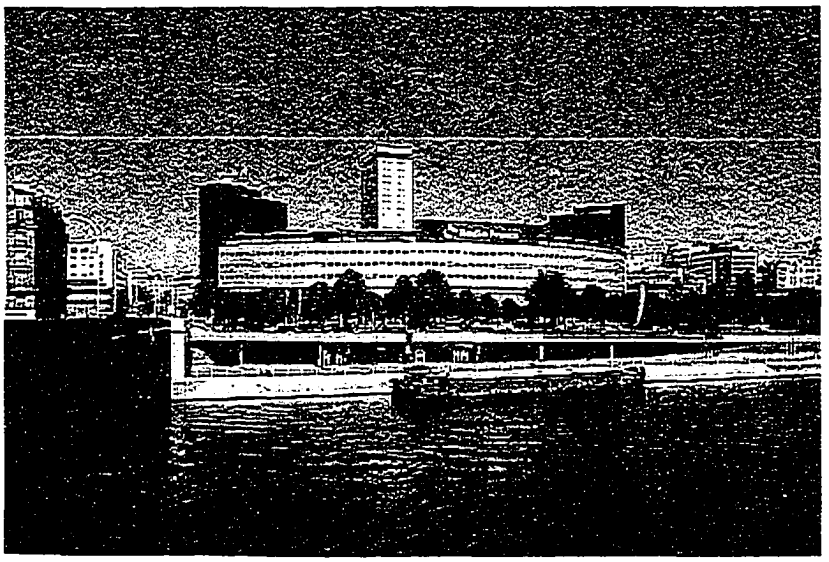


Figure 1.53. Henri Bernard, *Maison de la Radio* (1963).

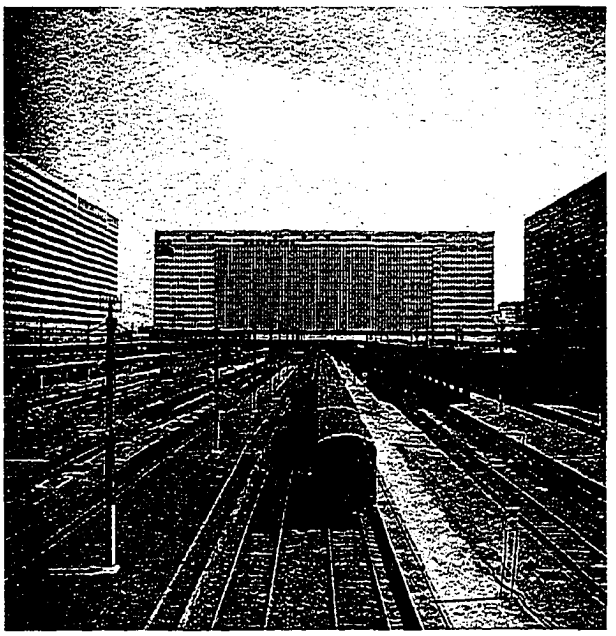


Figure 1.54. Eugène Beaudoin, Raymond Lopez, et al. *Ensemble Maine Montparnasse* (c. 1964); as published in Schein, *Paris construit*, p. 78.

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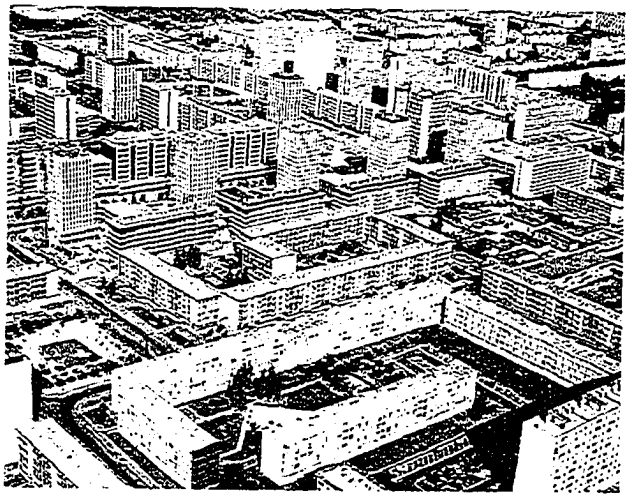


Figure 1.55. Roger Boileau, Jacques-Henry Labourdette, *Grands Ensembles de Sarcelles* (1955-72)

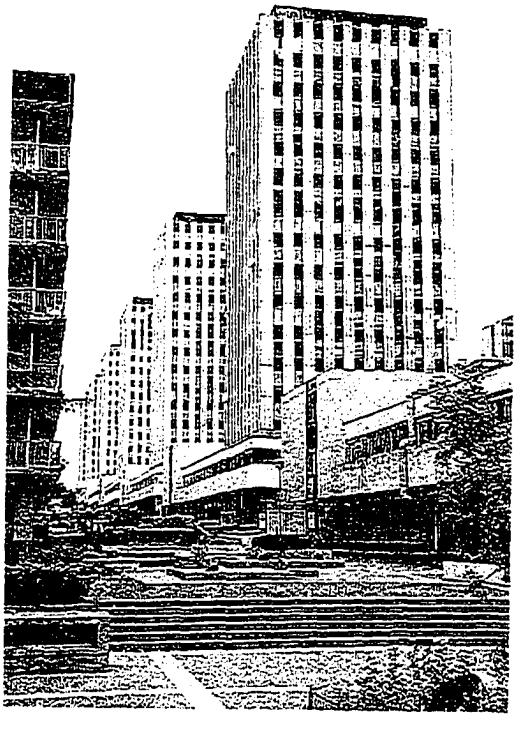


Figure 1.56. Roger Boileau, Jacques-Henry Labourdette, *Grands Ensembles de Sarcelles* (1955-72)

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Figure 2.1. *L'architecture d'aujourd'hui* no. 102 (1962).

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Figure 2.2. Michel Ragon, ed., *Les Visionnaies de l'architecture* (1965).



Figure 2.3. Virilio and Parent at their exhibition at Arc et Senans (c. 1965).

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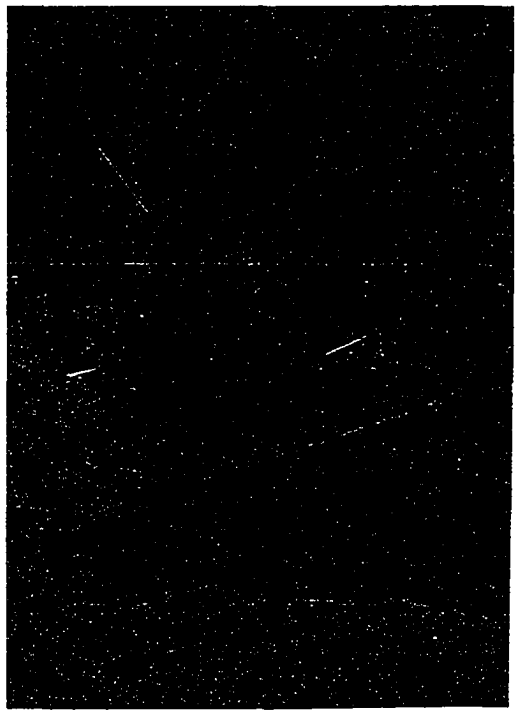


Figure 2.4. Pierre Soulages, *Painting* (1961)

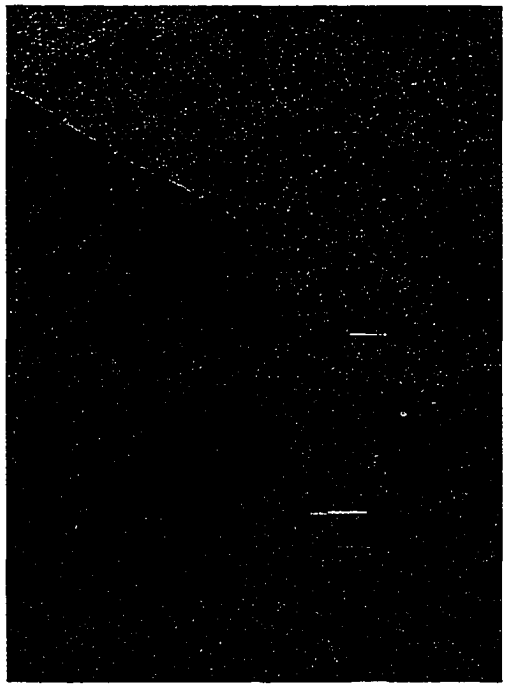


Figure 2.5. Serge Poliakoff, *Composition* (1960)

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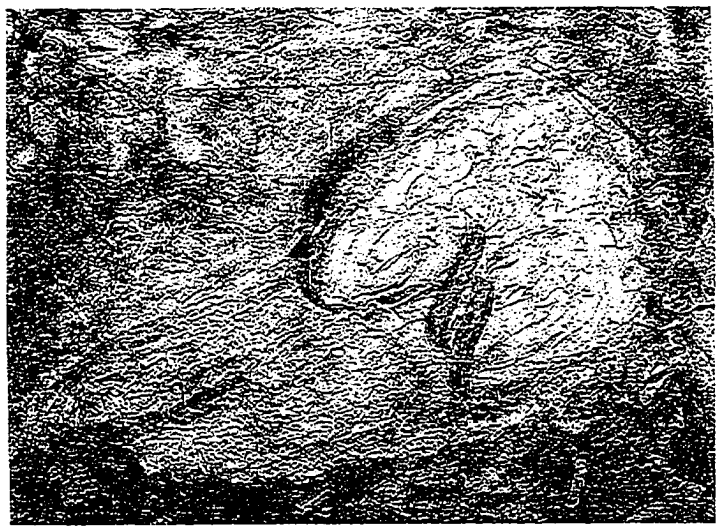


Figure 2.6. Jean Fautrier, *I'm Falling in Love* (1957).

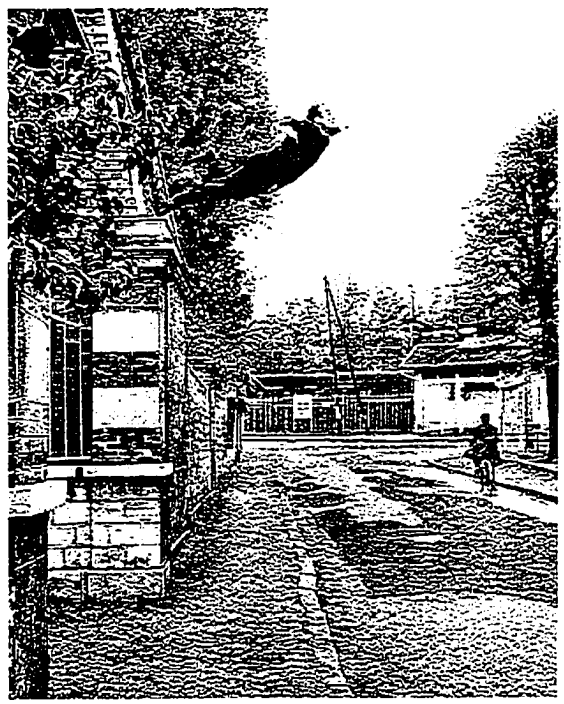


Figure 2.7. Yves Klein, *Leap into the Void* (1960).

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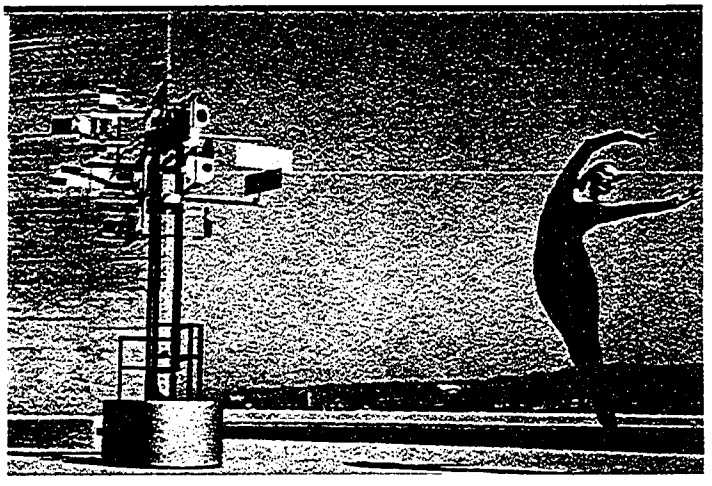


Figure 2.8. Performance with Schöffer's *Cysp I* at the Unité d'Habitation in Marseille, 1956.

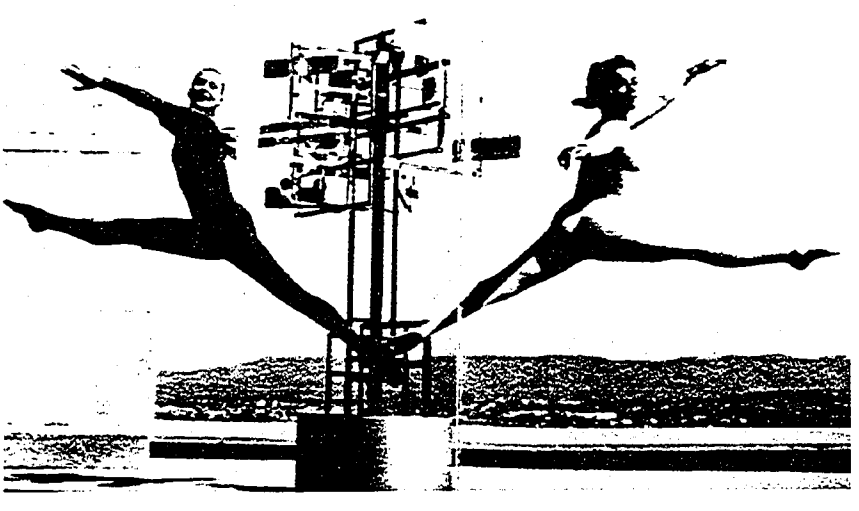


Figure 2.9. Performance with Schöffer's *Cysp I* at the Unité d'Habitation in Marseille, 1956.

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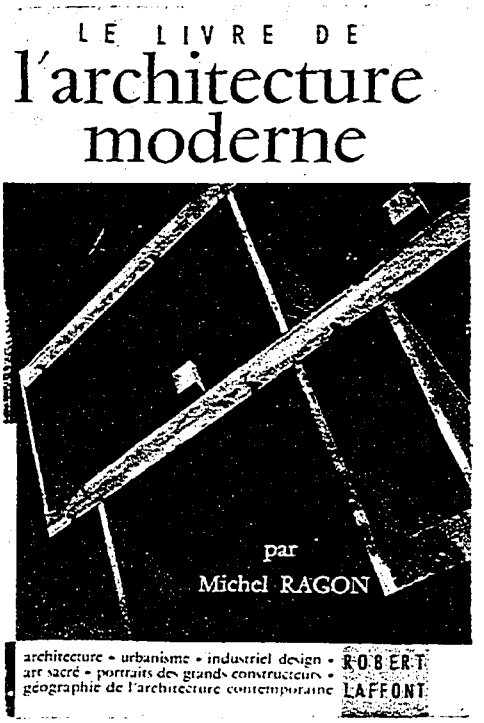


Figure 2.10. Michel Ragon, *Le livre de l'architecture moderne* (1958).

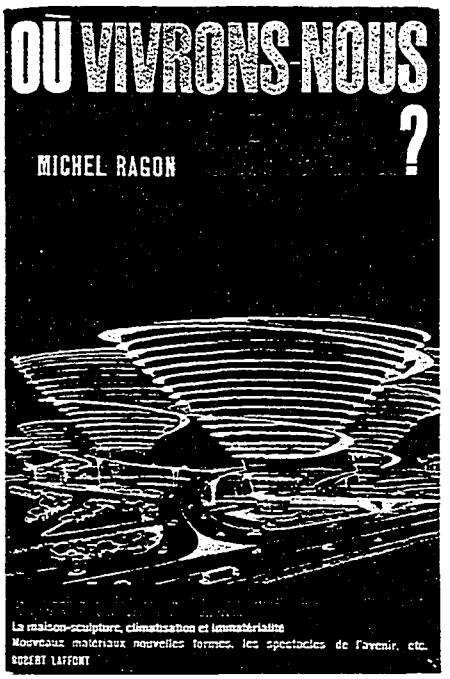


Figure 2.11. Michel Ragon, *Où-vivrons nous demain?* (1963).

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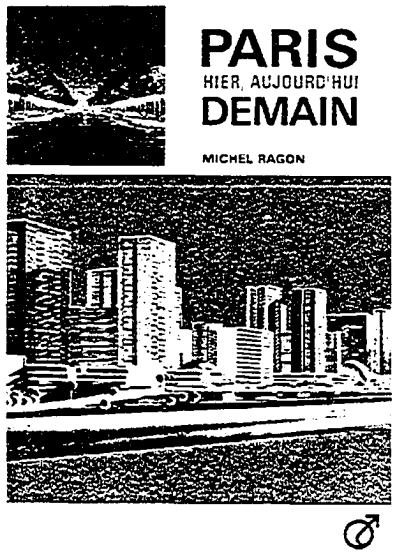


Figure 2.12. Michel Ragon, *Paris: hier, aujourd'hui, demain* (1965)



Figure 2.13. Michel Ragon, *La cité de l'an 2000* (1968)

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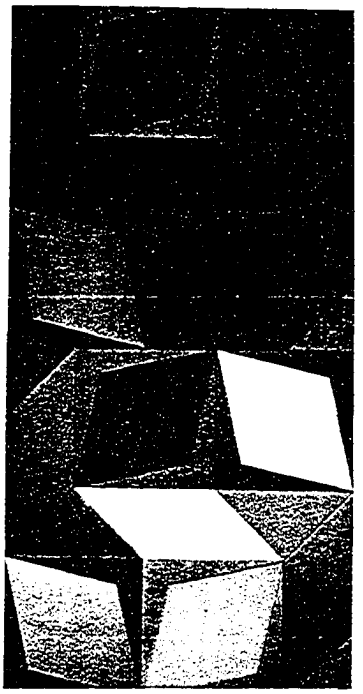


Figure 2.14. Victor Vasarely, *Idom M.C.* (1967)

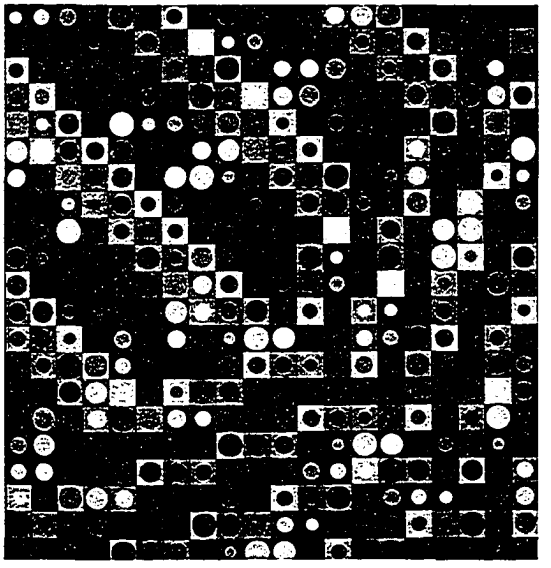


Figure 2.15. Victor Vasarely *Orion M.C.* (1964)

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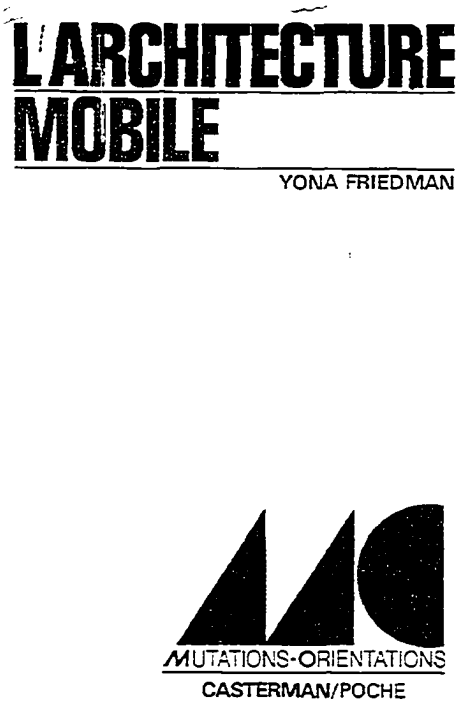


Figure 2.16. Yona Friedman. *L'architecture mobile* (1970)

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Figure 3.1. Jean-Luc Godard placing the soap boxes that would appear in his *Deux ou trois choses je sais d'elle* (1967).



Figure 3.2. Ionel Schein. *Paris construit* (1970).

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Figure 3.3. Ionel Schein. *Les Thibaudières ensemble at Boussy-Saint-Antoine* (1967).

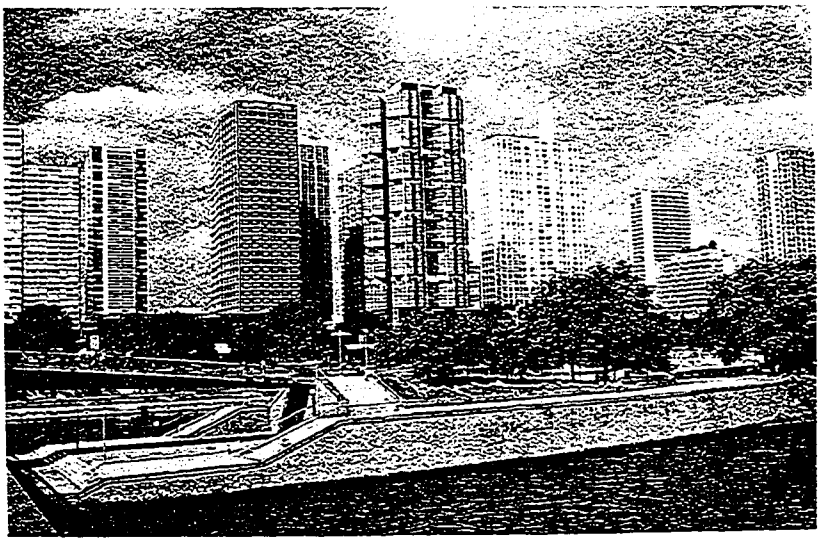


Figure 3.4. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978): view.

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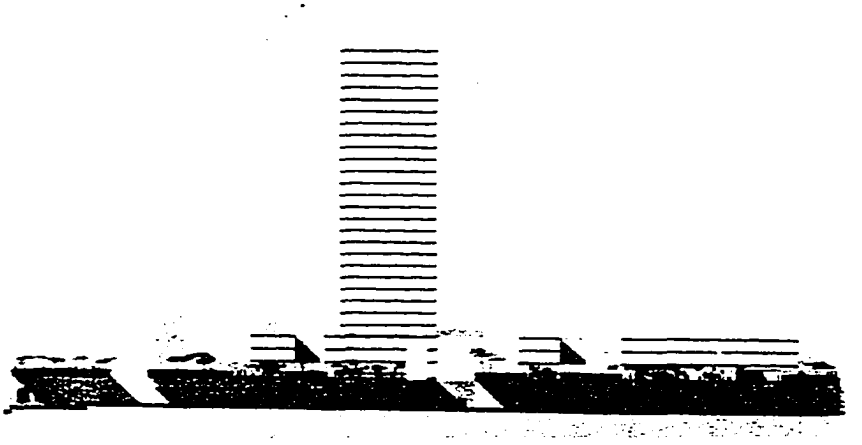


Figure 3.5. Raymond Lopez. Henry Pottier. Michel Proux. *Front de Seine* (1966-1978): elevation. circa 1962.



Figure 3.6. Raymond Lopez. Henry Pottier. Michel Proux. *Front de Seine* (1966-1978): view. photo Larry Busbea.

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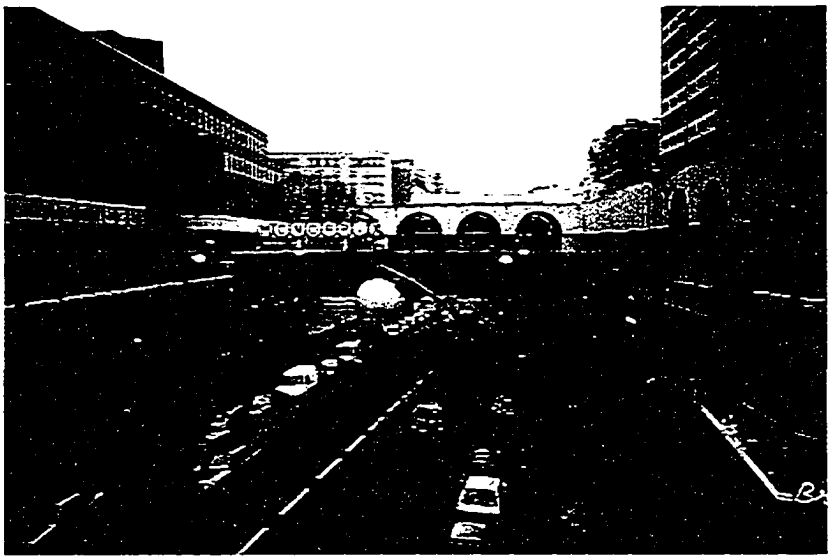


Figure 3.7. Raymond Lopez, Henry Pottier, Michel Proux, *Front de Seine* (1966-1978): view, photo Larry Busbea

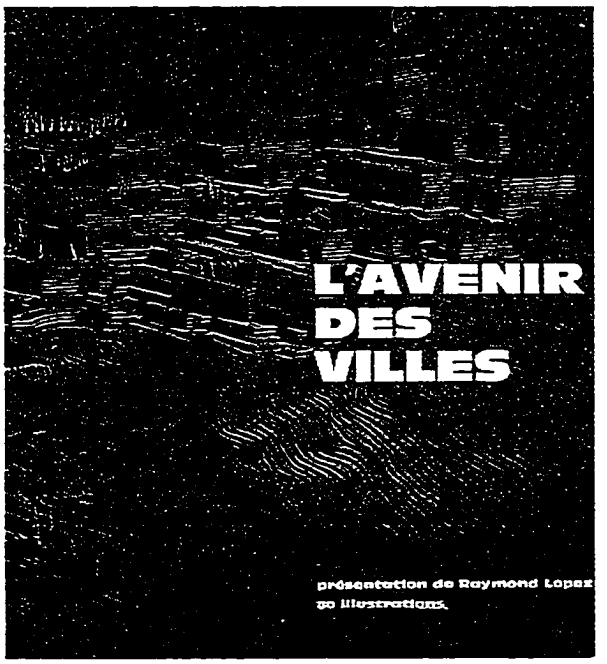


Figure 3.8. Raymond Lopez, *L'avenir des villes* (1964).

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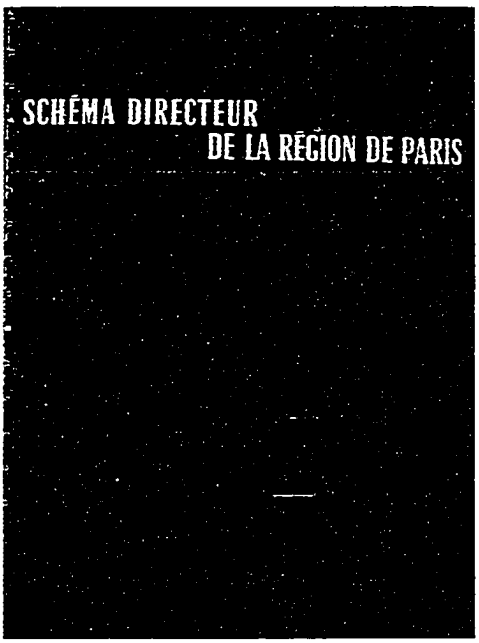


Figure 3.9. *Schéma directeur de la région Parisienne* (1965).

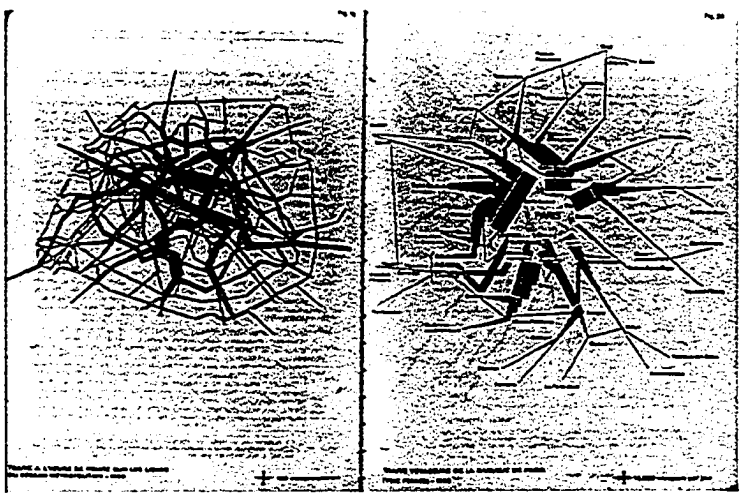


Figure 3.10. *Schéma directeur de la région Parisienne* (1965): Traffic studies of Paris (left) and the region (right).

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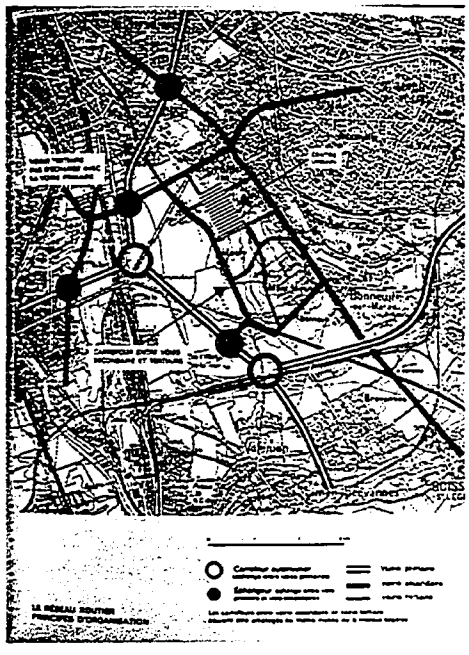


Figure 3.11. *Schéma directeur de la région Parisienne* (1965): proposed traffic circulation scheme for central Paris.

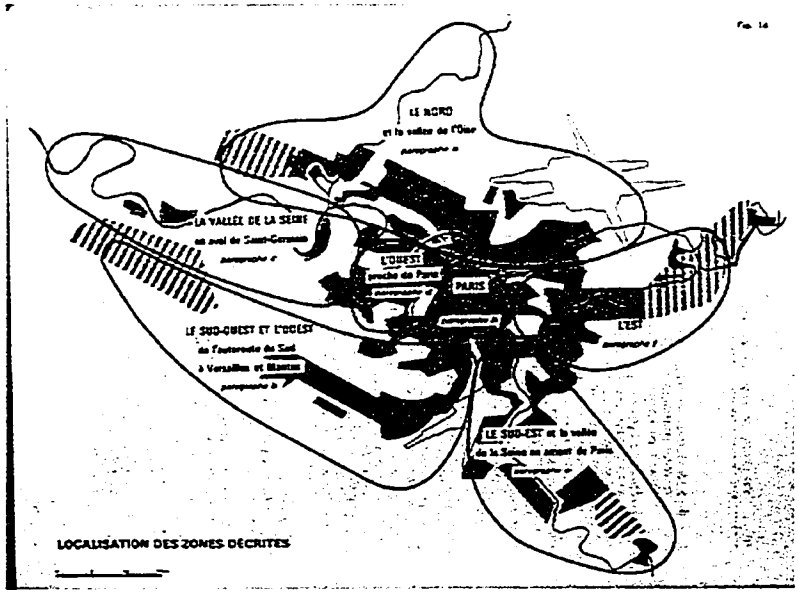


Figure 3.12. *Schéma directeur de la région Parisienne* (1965): schematic zoning.

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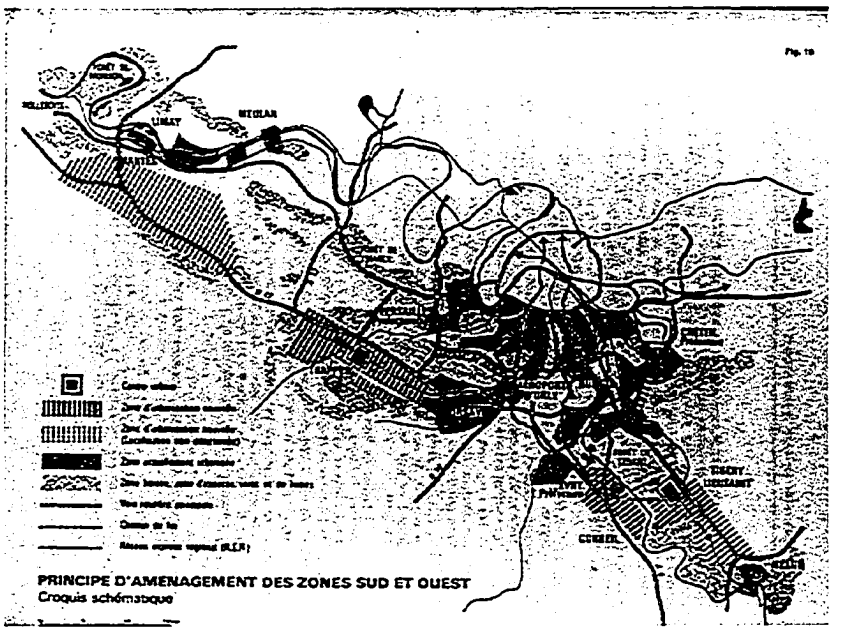


Figure 3.13. *Schéma directeur de la région Parisienne* (1965): Southwest zone.



Figure 3.14. *L'architecture d'aujourd'hui* no.88 (1960).

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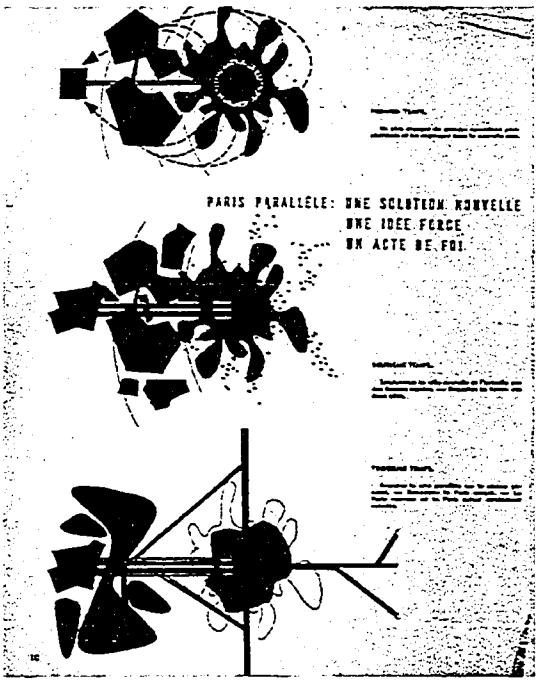


Figure 3.15. André Bloc and Claude Parent. *Paris parallel* (1960): 3 stages of implementation.

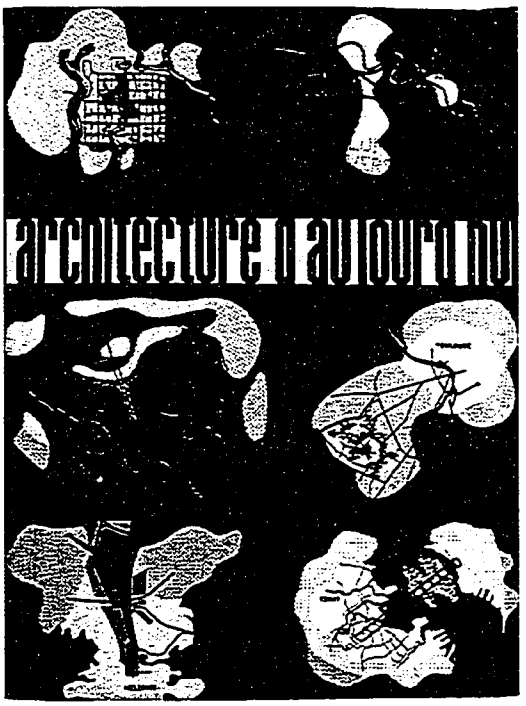


Figure 3.16. *L'architecture d'aujourd'hui* no. 96 (1962).

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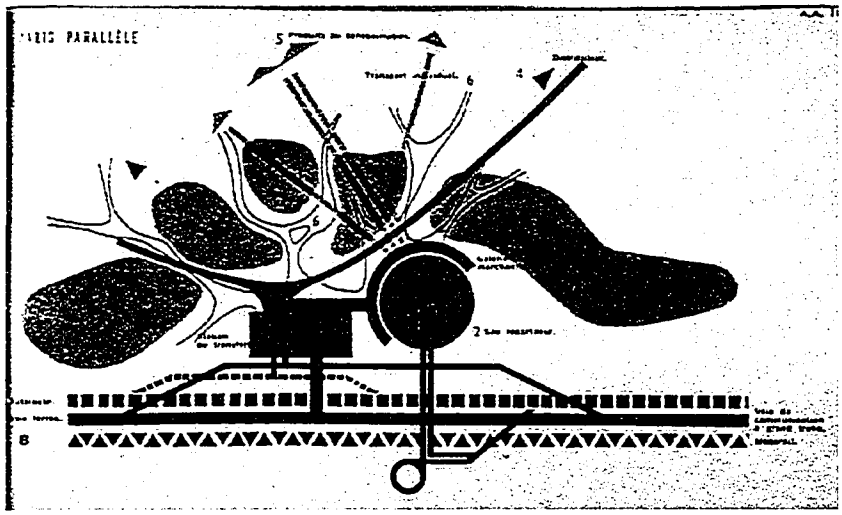


Figure 3.17. Claude Parent, et al., *Paris parallèle* (1962): circulation scheme.

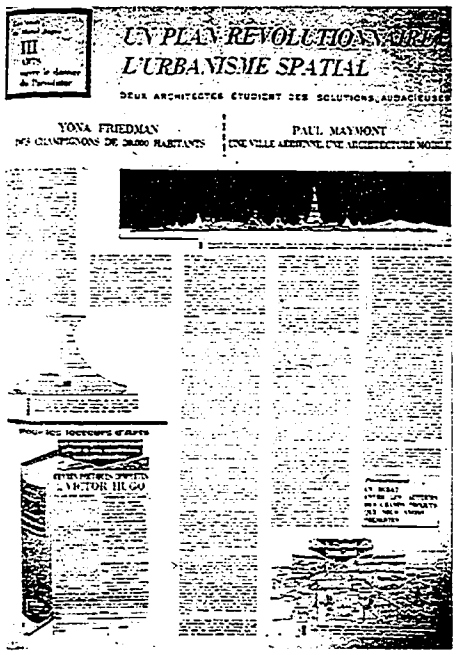


Figure 3.18. From *Arts* no. 858 (1962), p. 5.

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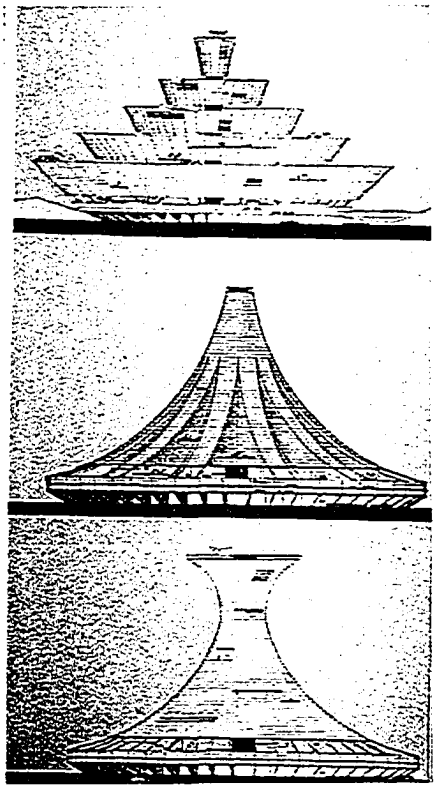


Figure 3.19. Paul Maymont. *Floating City* projects (c. 1960).

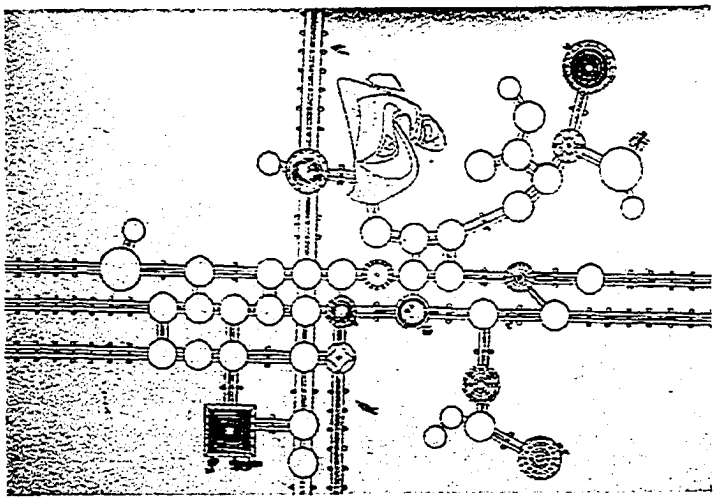


Figure 3.20. Paul Maymont. *Floating City* projects (c. 1960): plan showing disposition of towers and connecting bridges.

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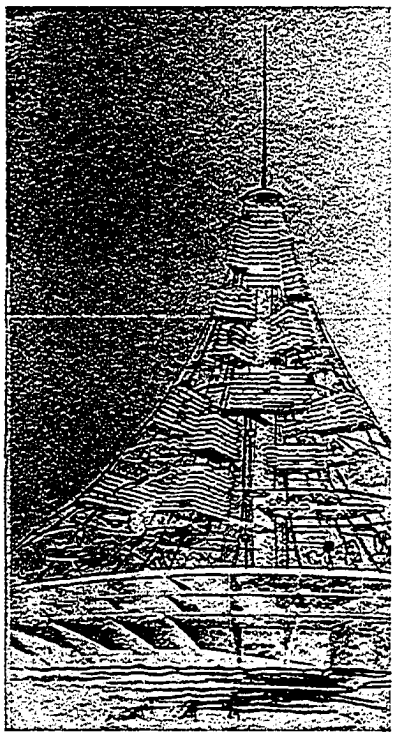


Figure 3.21. Paul Maymont. *Floating City* projects (c. 1960): detail of tower, showing platforms.



Figure 3.22. Paul Maymont. *Floating City. Study for the Bay of Tokyo* (1959).

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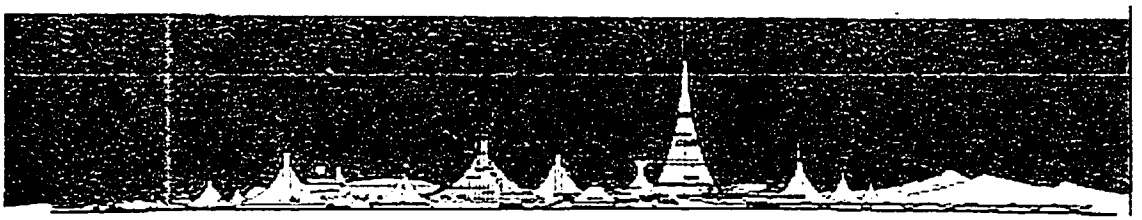


Figure 3.23. Paul Maymont. Plan for Paris and the Plaine de Montesson (1961).



Figure 3.24. Paul Maymont. Plan for Paris and the Plaine de Montesson (1961/2): this scheme includes the Plaine de Montesson agglommeration, as well as a large North/South-running ensemble in Paris, to the East of the Île de la Cité.

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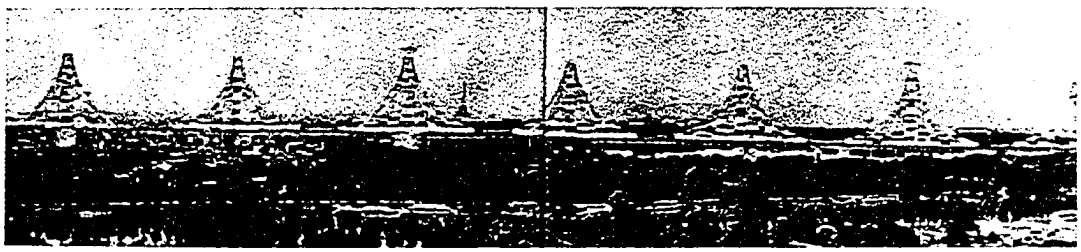


Figure 3.25. Paul Maymont, Project for Paris (c. 1963).

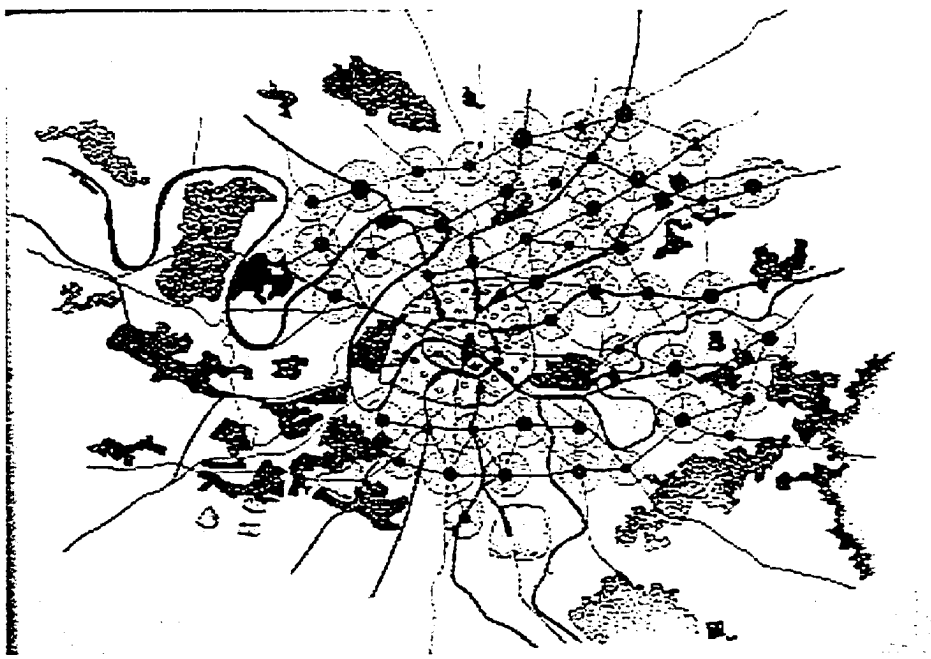


Figure 3.26. Paul Maymont, Project for Paris (1964/5)

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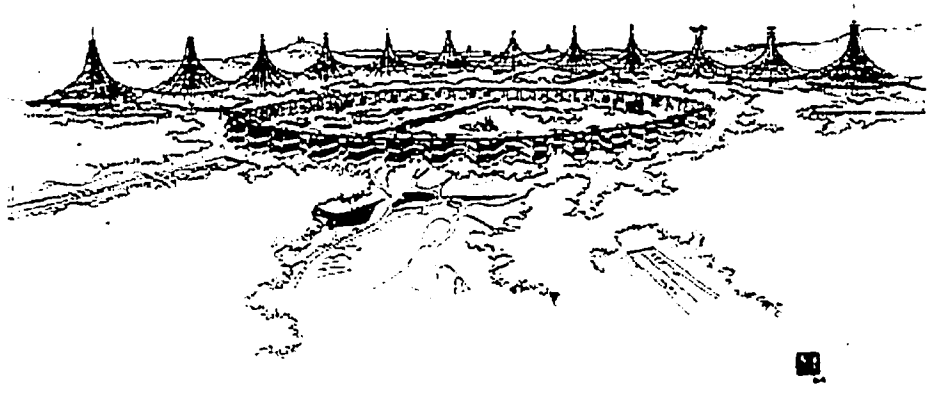


Figure 3.27. Paul Maymont. Project for Paris (1964/5): rendering of one of the circular agglomerations.

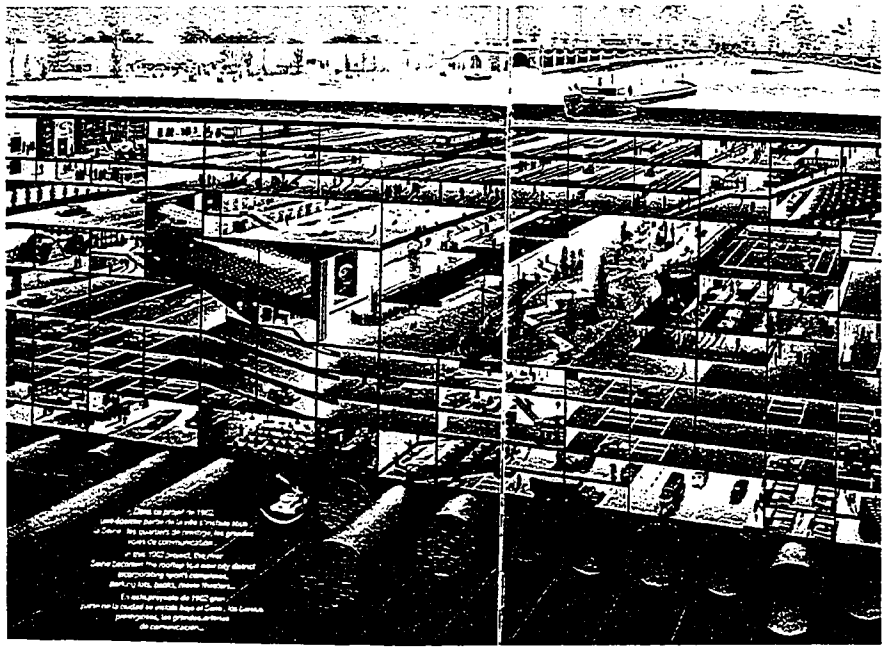


Figure 3.28. Paul Maymont, *Paris sous la Seine* (1962).

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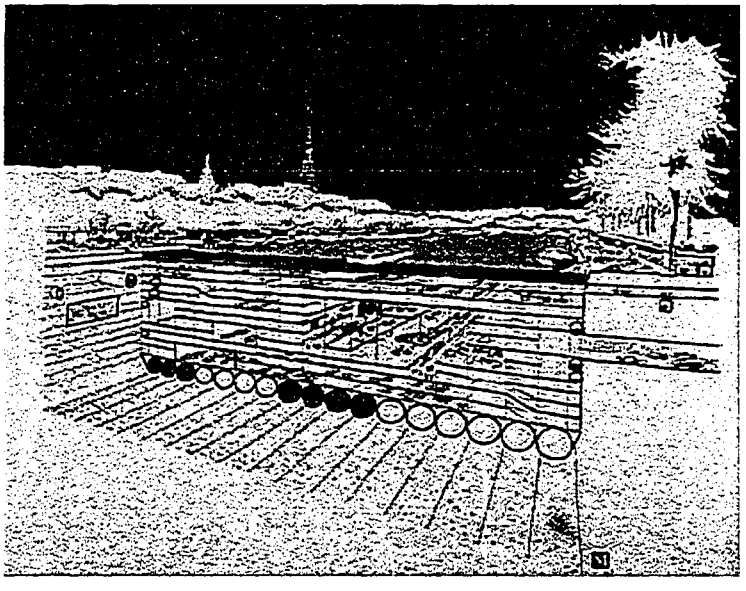


Figure 3.29. Paul Maymont, *Paris sous la Seine* (1962).

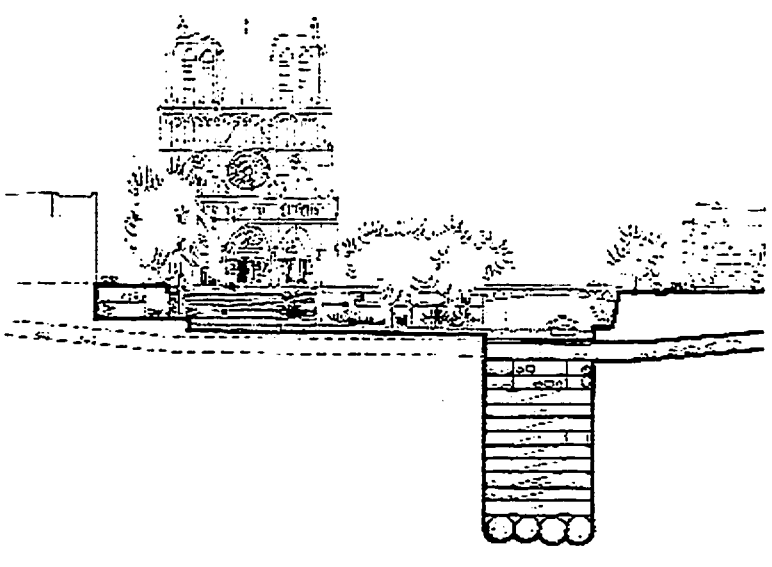


Figure 3.30. Paul Maymont, *Paris sous la Seine* (1962-4).
Elevation and section of Notre Dame hub.

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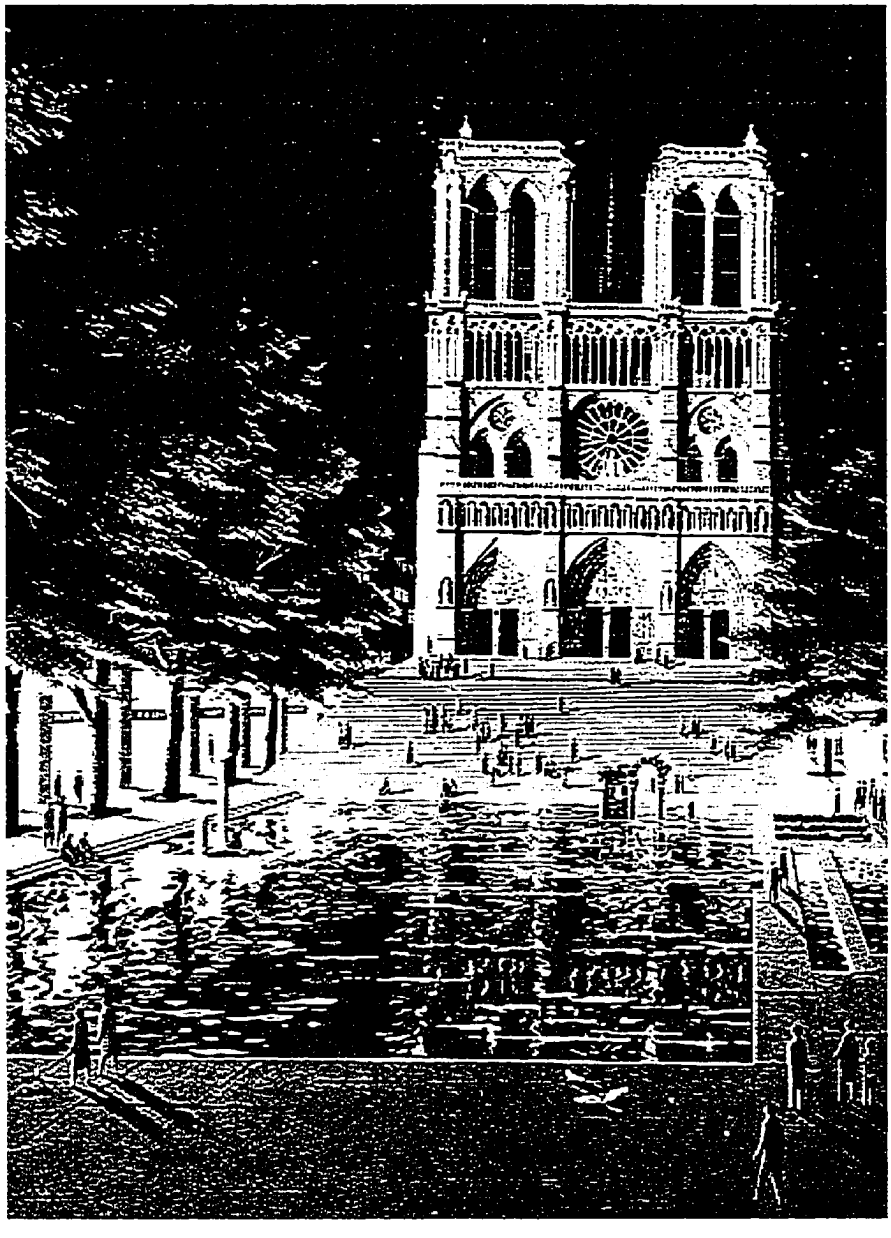


Figure 3.31. Paul Maymont, *Paris sous la Seine* (1962-4).
Rendering of the Place Notre Dame.

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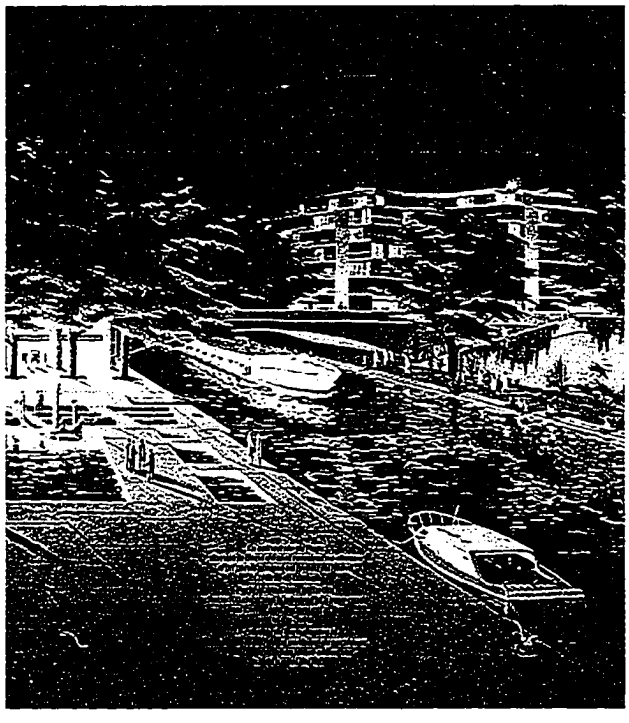


Figure 3.32. Paul Maymont, *Paris sous la Seine* (1962-4). Rendering of the Place Notre Dame, looking across to the Quai de Montebello.

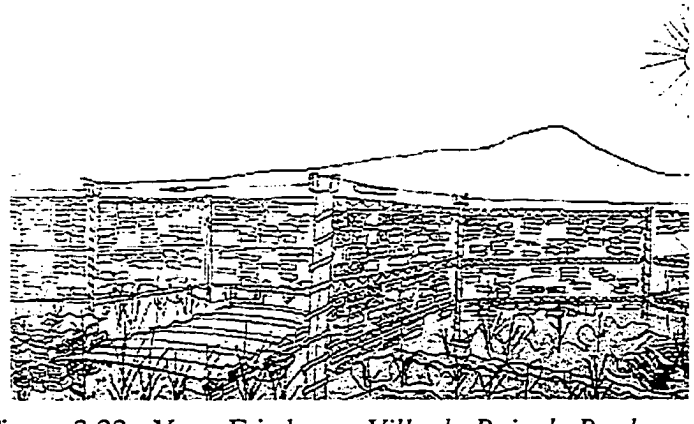


Figure 3.33. Yona Friedman, *Ville du Bois de Boulogne* (1957)

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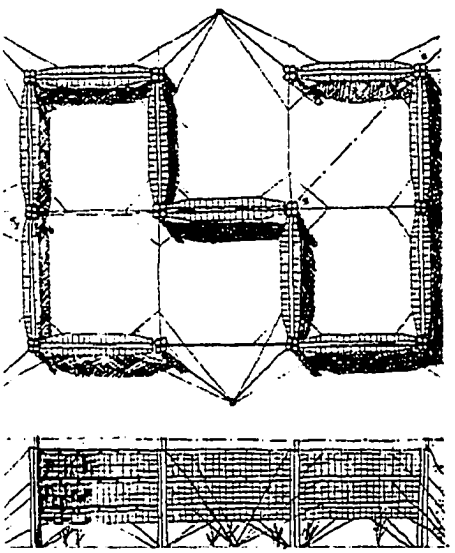


Figure 3.34. Yona Friedman, *Ville du Bois de Boulogne* (1957); plan and elevation.

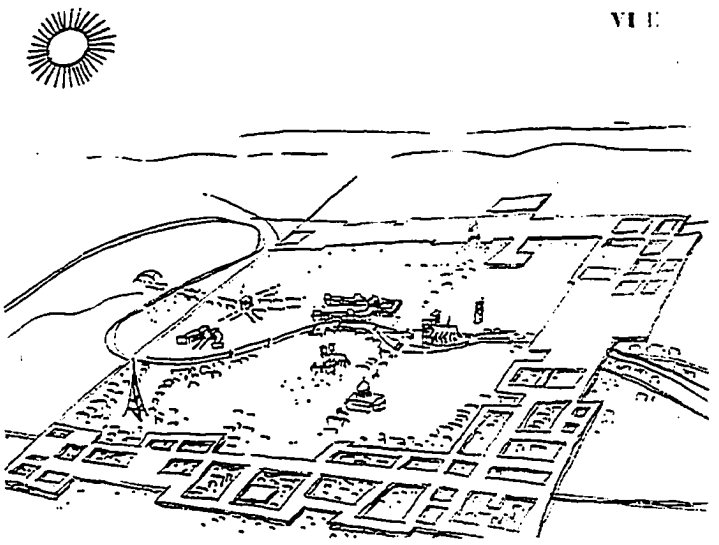


Figure 3.35. Yona Friedman, *Paris Spatial* (1962)

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Figure 3.36. Yona Friedman, *Paris Spatial* (c.1963-4)

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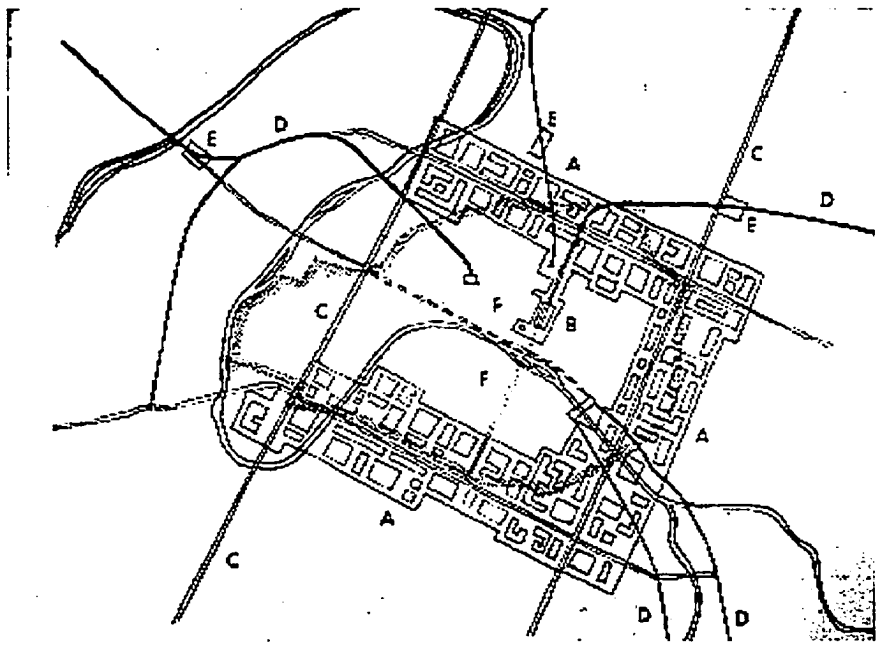


Figure 3.37. Yona Friedman, *Paris Spatial* (c.1962)

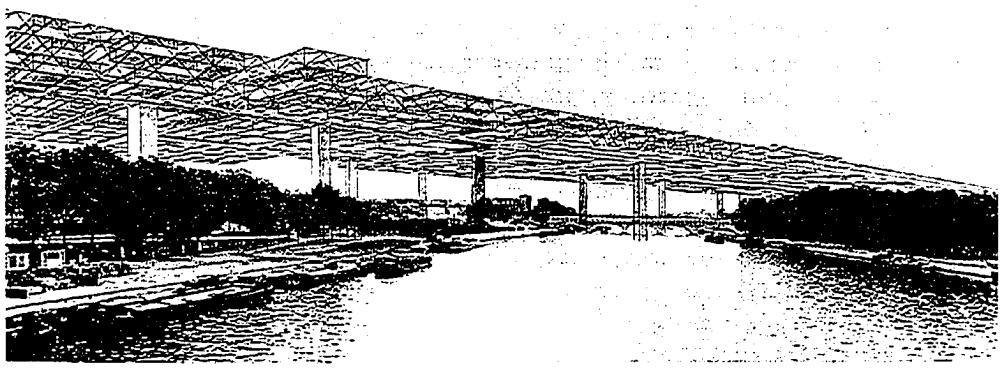


Figure 3.38. Yona Friedman, *Paris Spatial* (c.1964-5)

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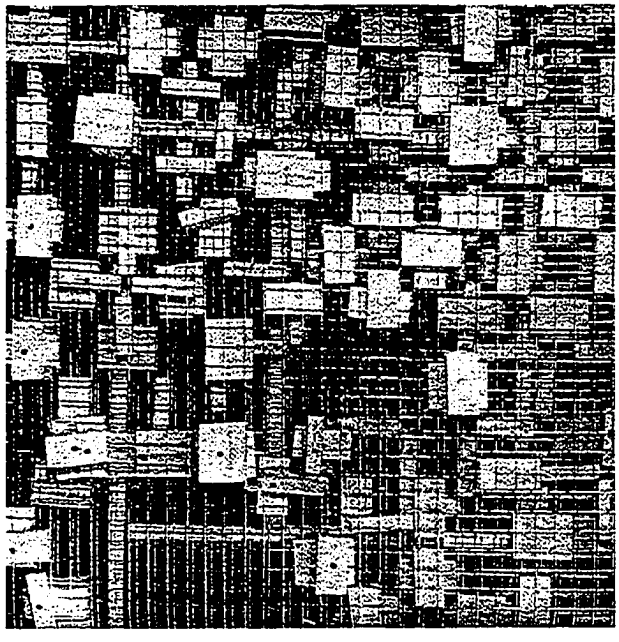


Figure 3.39 Yona Friedman, detail of a wire model (c. 1963).

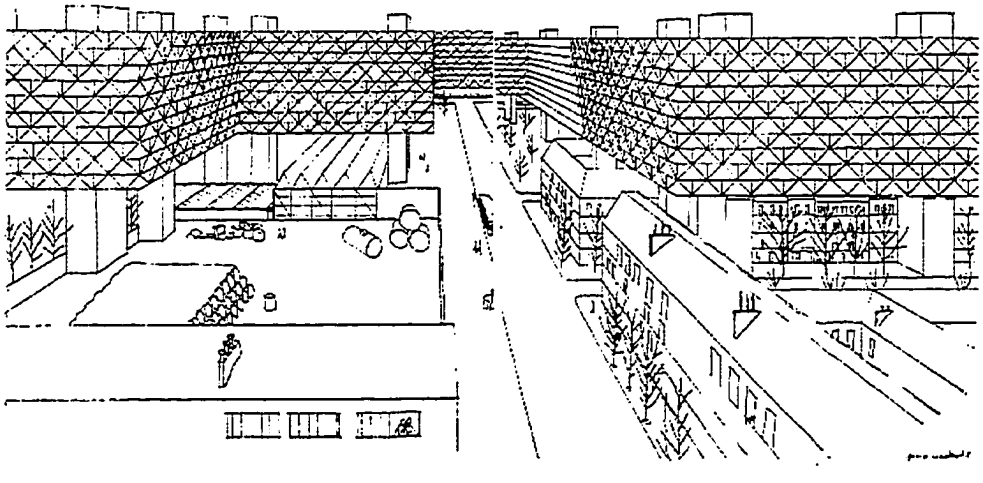


Figure 3.40. Yona Friedman, *Paris Spatial* (c.1959-63).

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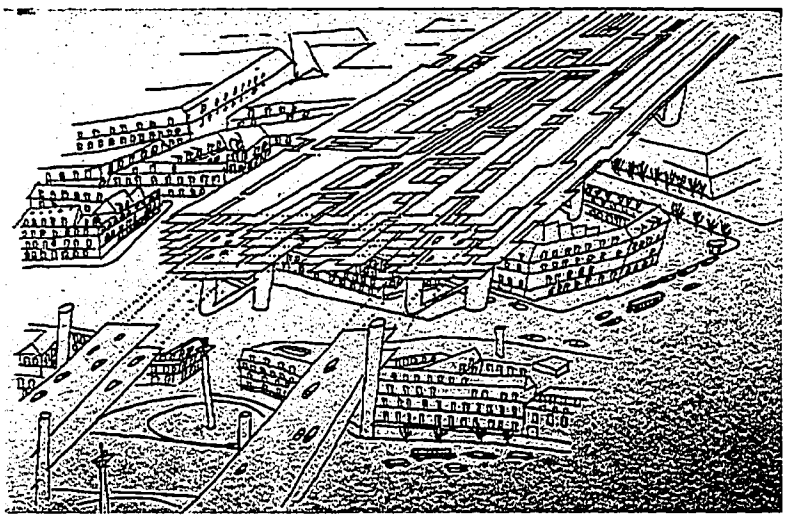


Figure 3.41. Yona Friedman, *Paris Spatial* (c.1959-63).

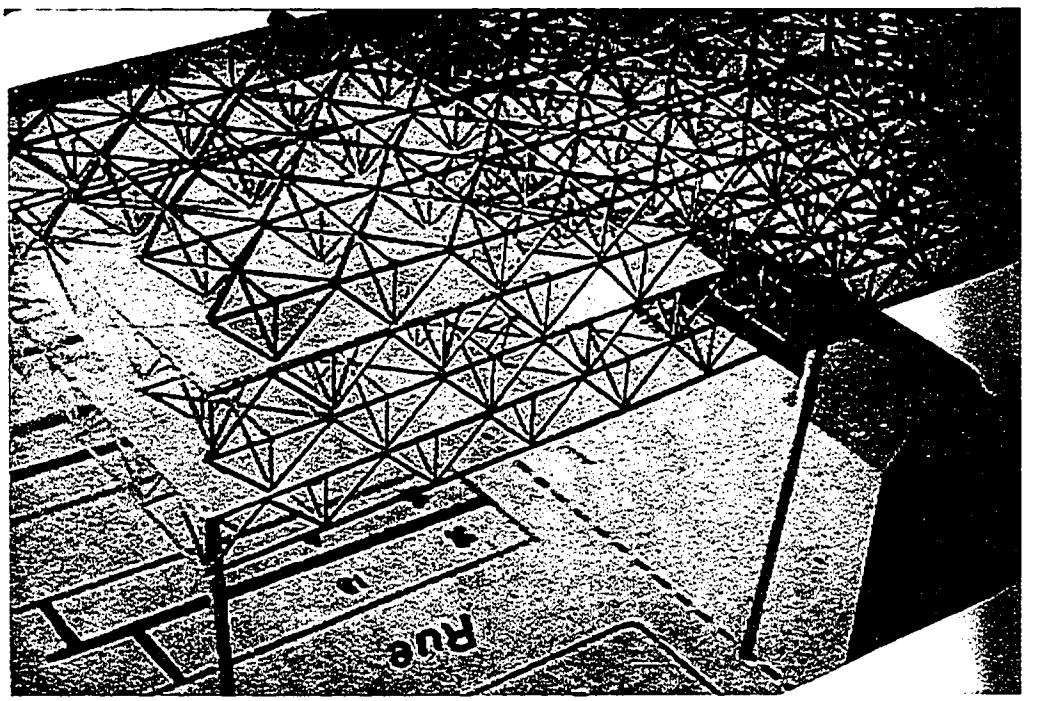


Figure 3.42. Yona Friedman, *Paris Spatial* (c.1959-63); detail of model.

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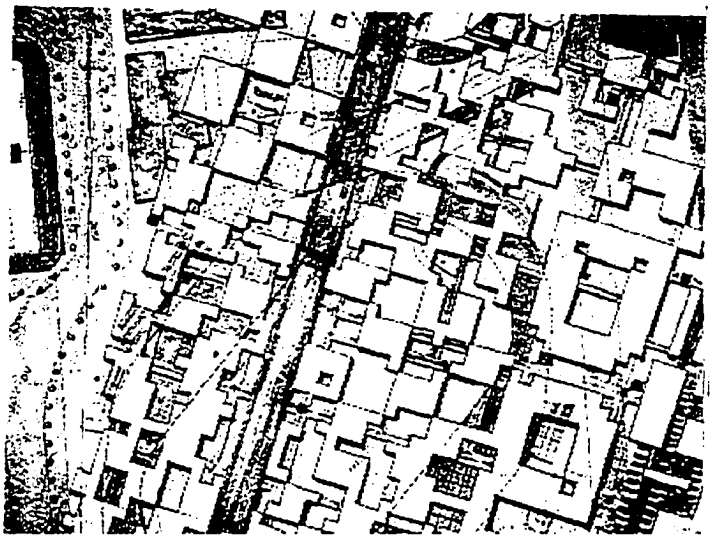


Figure 3.43. Yona Friedman, *Paris Spatial* (c.1959-63): plan showing distribution of masses.

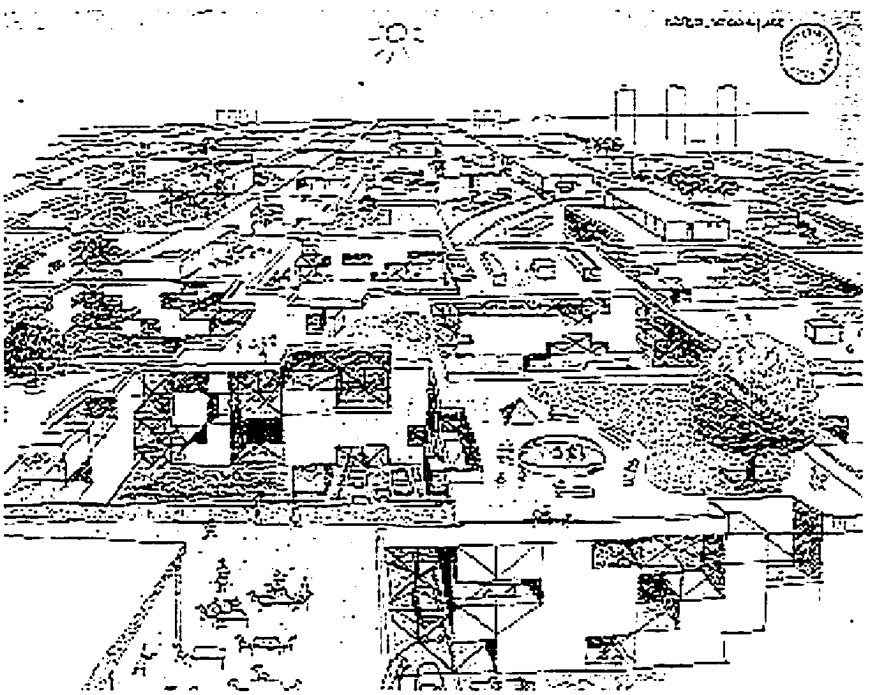


Figure 3.44. Yona Friedman, rendering of a Spatial City (n.d.).

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Figure 3.45. Yona Friedman, *Paris Spatial* (c.1959-63): photomontage.

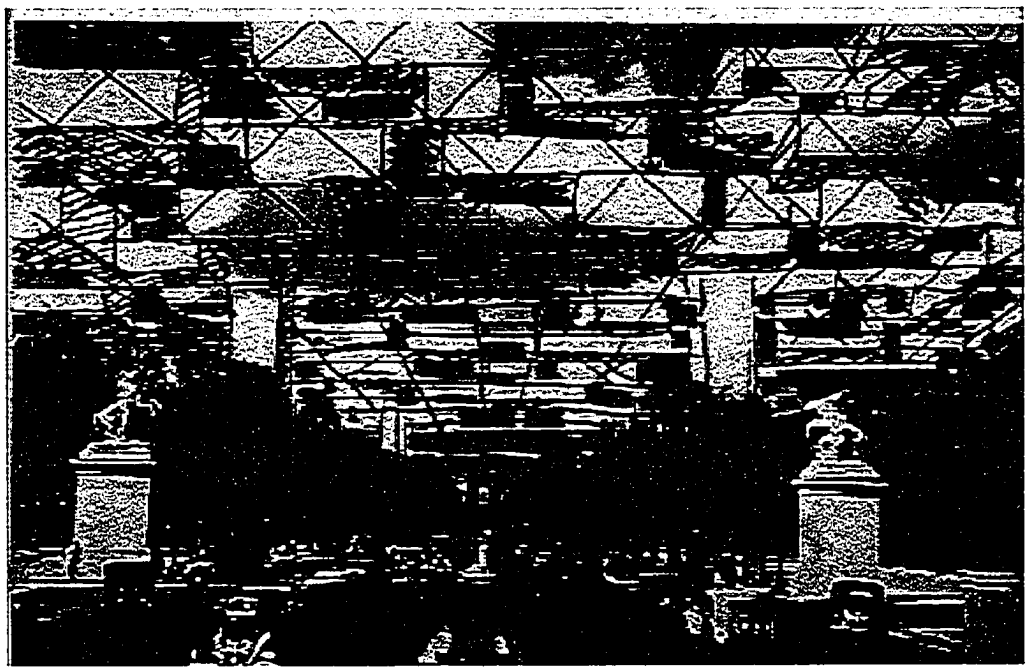


Figure 3.46. Yona Friedman, *Paris Spatial* (c.1959-63): photomontage.

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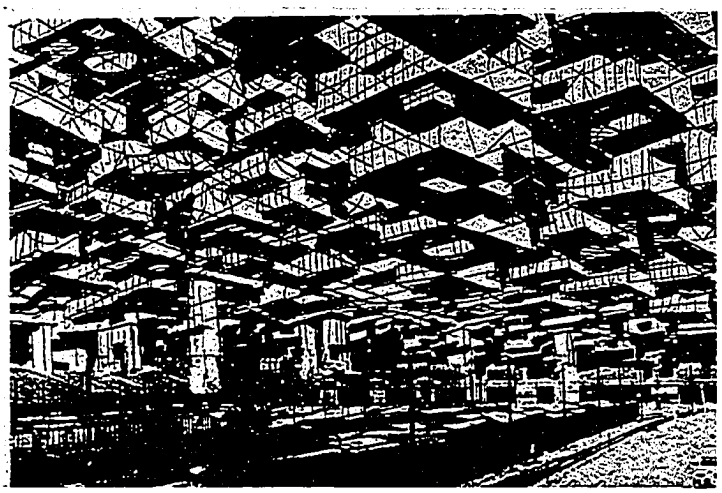


Figure 3.47. Yona Friedman. *Paris Spatial* (c.1959-63): photomontage.

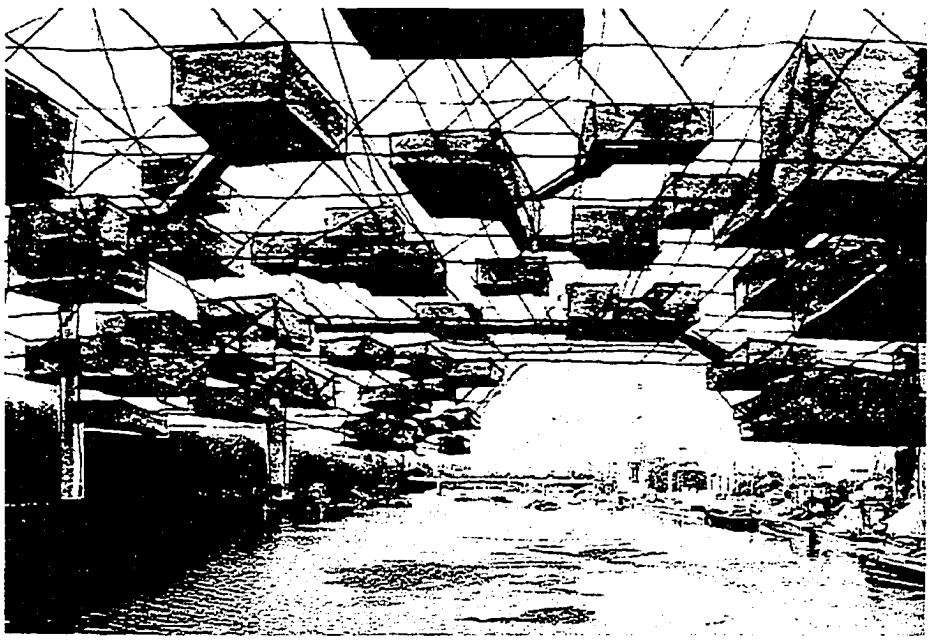


Figure 3.48. Yona Friedman. *Paris Spatial* (c.1959-63): photomontage.

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Figure 3.49. Yona Friedman, *Gare St. Lazare* project (1964): Batignolles area.

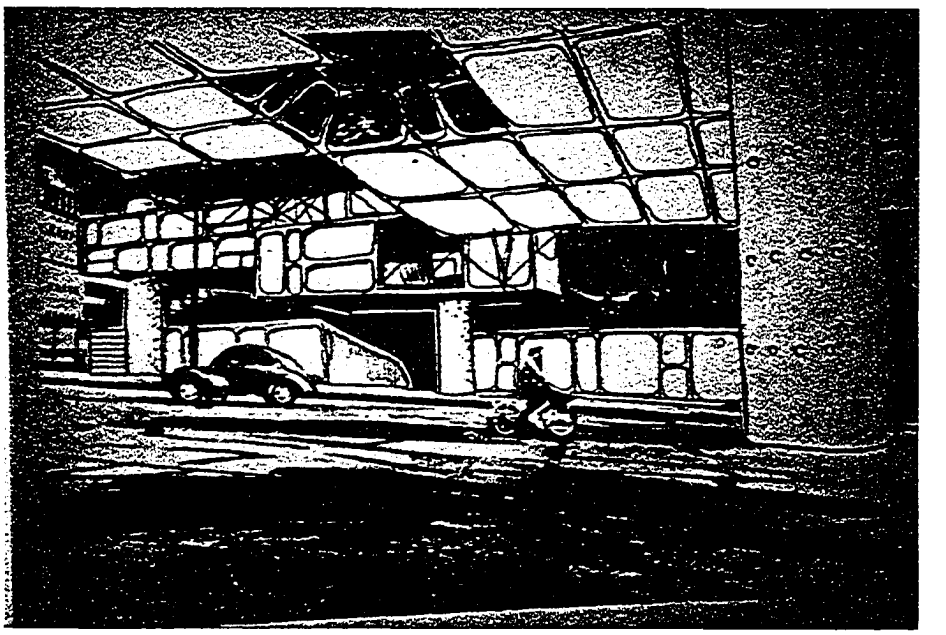


Figure 3.50. Yona Friedman, *Gare St. Lazare* project (1964); Batignolles area.

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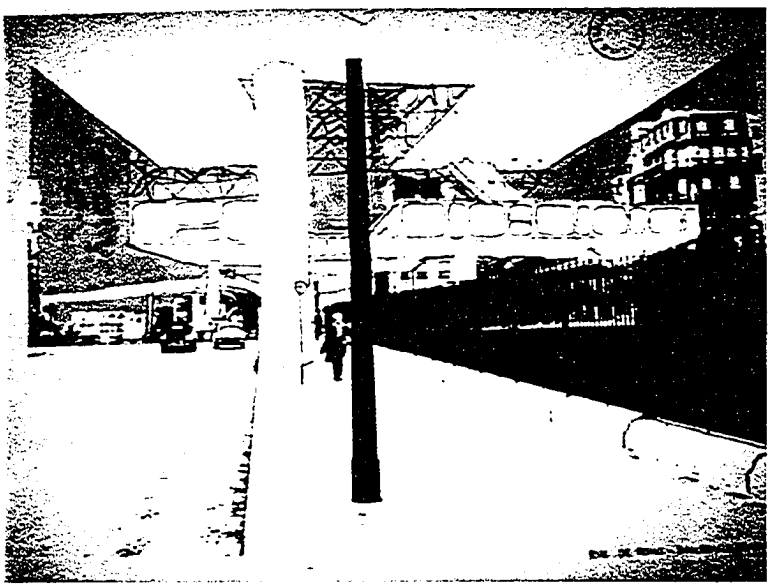


Figure 3.51. Yona Friedman. *Gare St. Lazare* project (1964): Batignolles area.

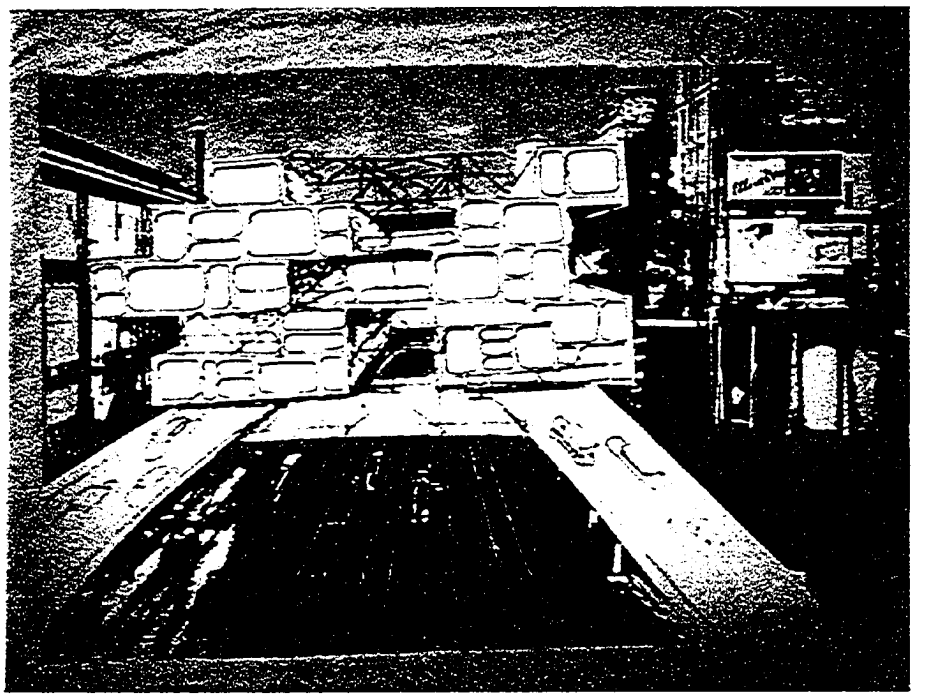


Figure 3.52. Yona Friedman. *Gare St. Lazare* project (1964): Batignolles area.

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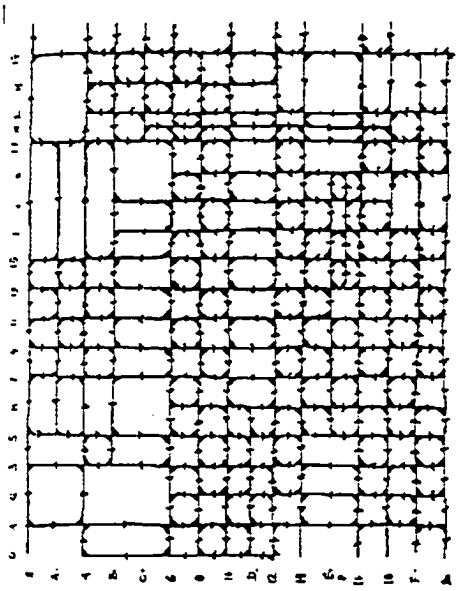


Figure 3.53. Yona Friedman, circulation plan for Paris (c. 1970)

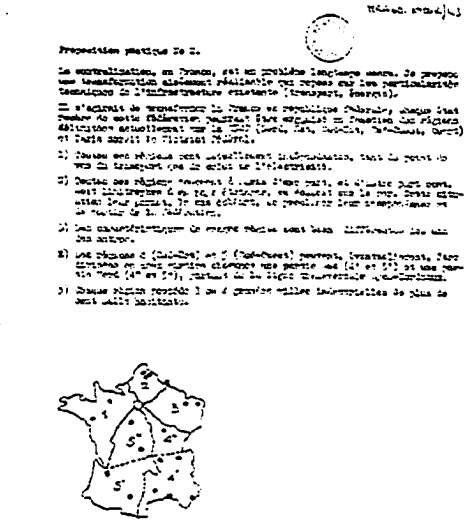


Figure 3.54. Yona Friedman, "*Proposition pratique no. 2*" (n.d.)

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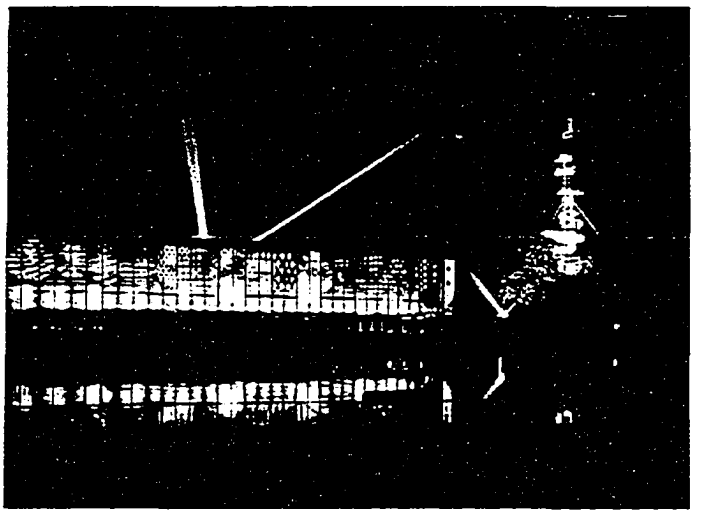


Figure 3.55. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961)

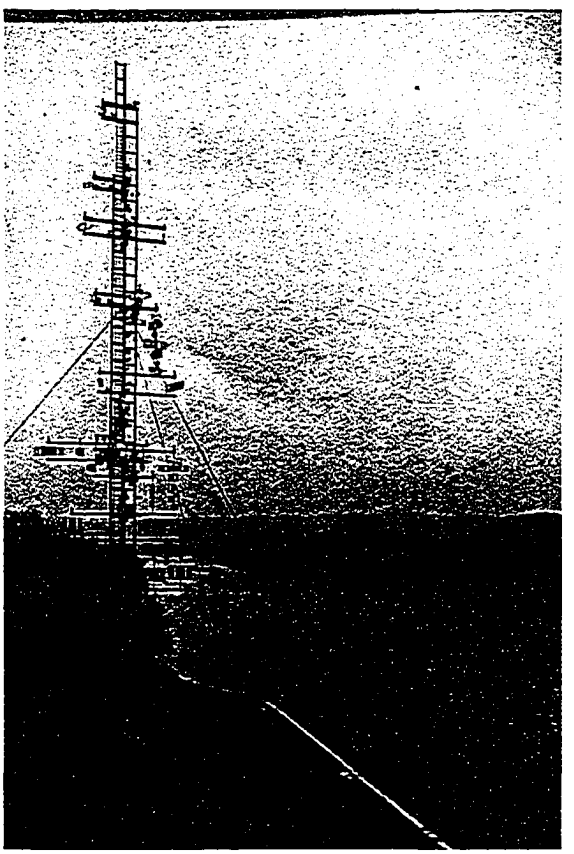


Figure 3.56. Nicolas Schöffer, *Cybernetic Tower*, Liège (1961)

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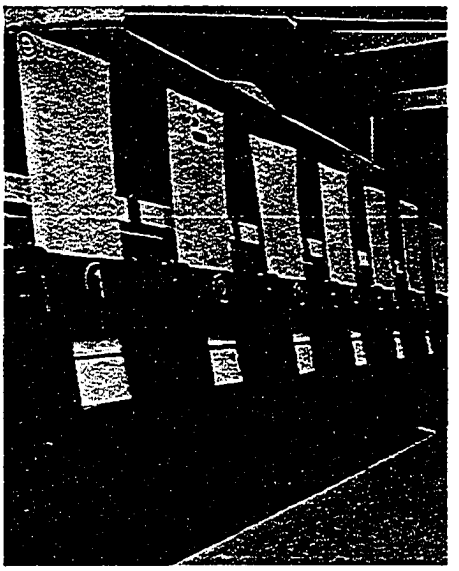


Figure 3.57. Nicolas Schöffer. *Cybernetic Tower*. Liège (1961): computer banks



Figure 3.58. Nicolas Schöffer. *Cybernetic Tower*. Liège (1961): the so-called "*cellule de l'indifference*"

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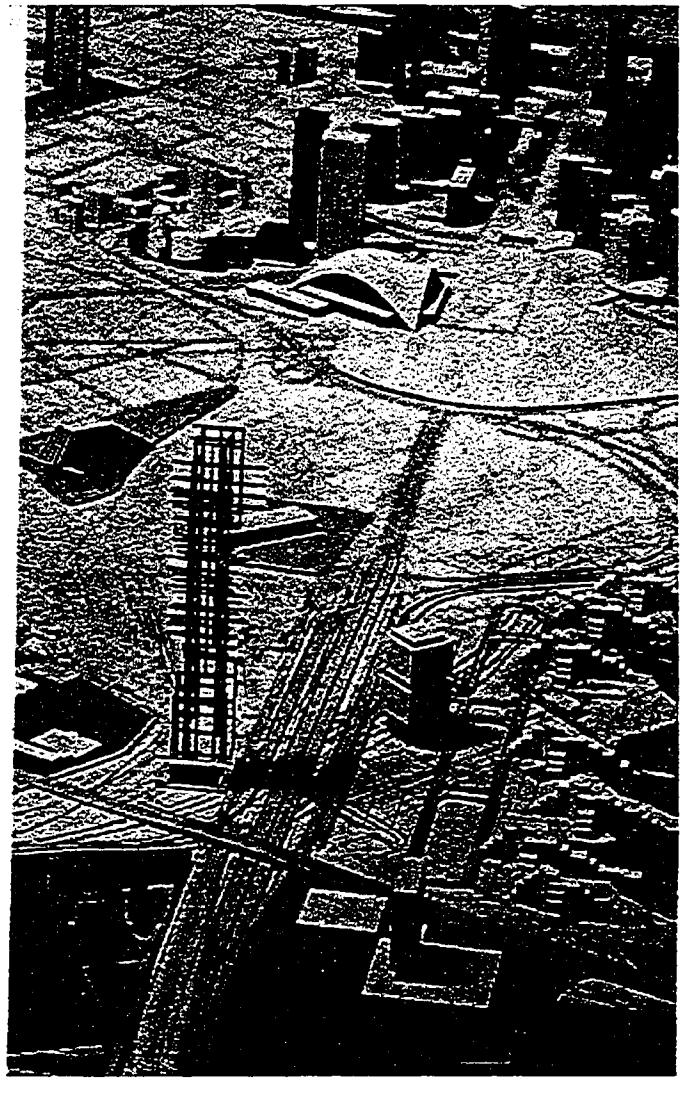


Figure 3.59. *La tour lumière cybernétique*. project for *La Défense* (1965-73): model showing site.

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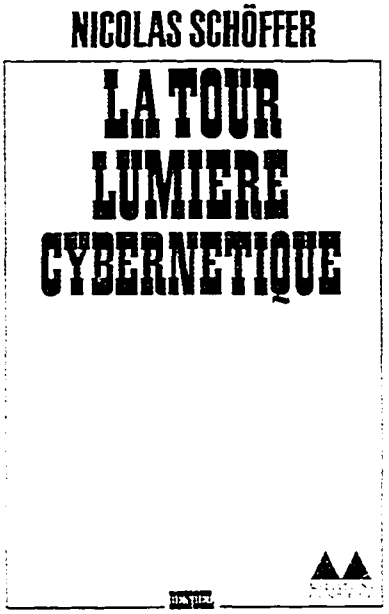


Figure 3.60. *La tour lumière cybernétique* (1973)

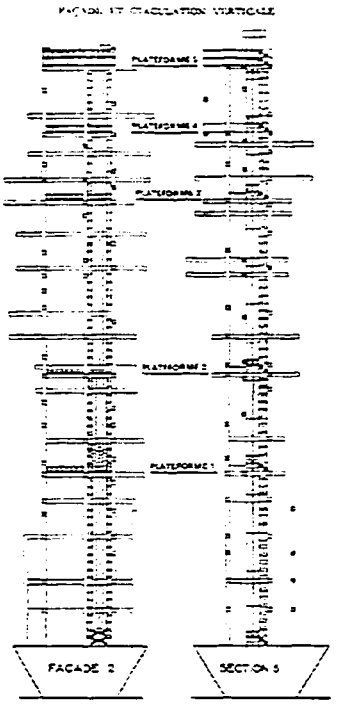


Figure 3.61. *La tour lumière cybernétique*. project for *La Défense* (1965-73): section.

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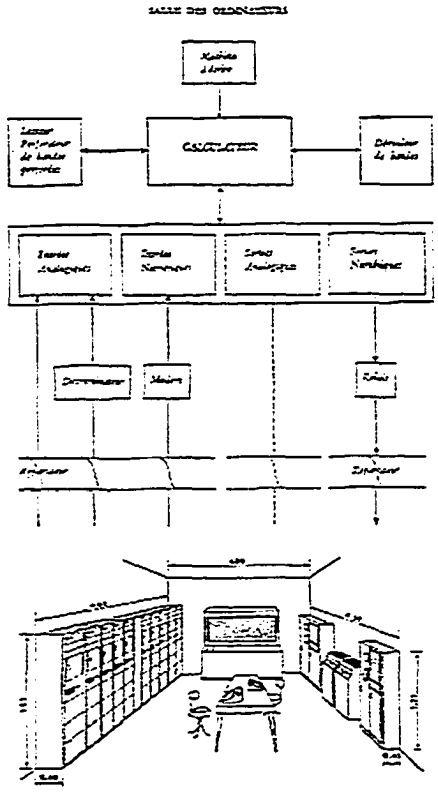


Figure 3.62. *La tour lumière cybernétique*, project for *La Défense* (1965-73): Computer control center.

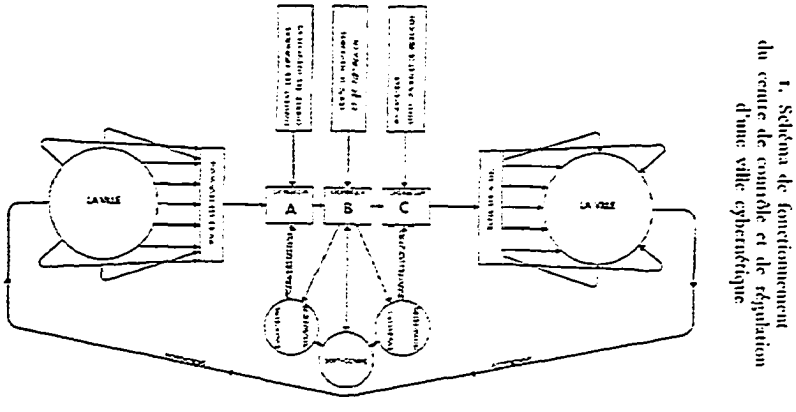


Figure 3.63. Nicolas Schöffer, *Control Center for a Cybernetic City* (c. 1965).

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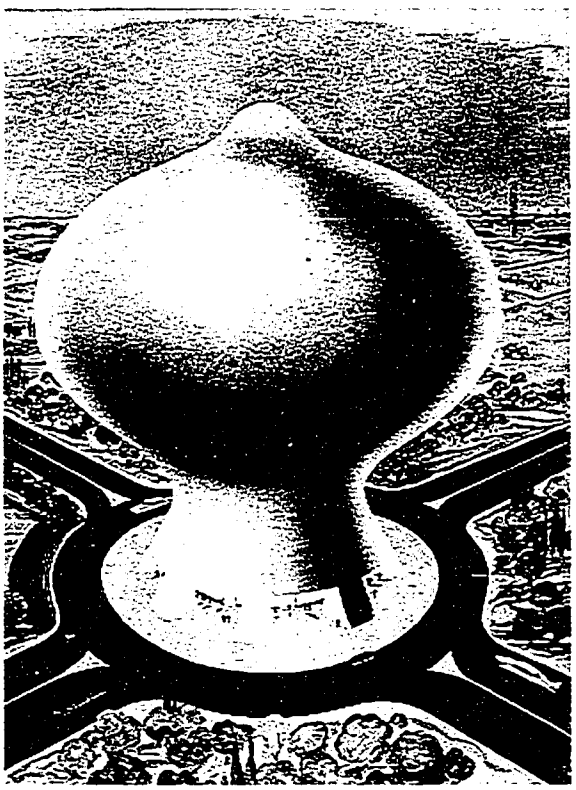


Figure 3.64. Nicolas Schöffer, *Sexual Leisure Center*, project for the Cybernetic City (c. 1965).

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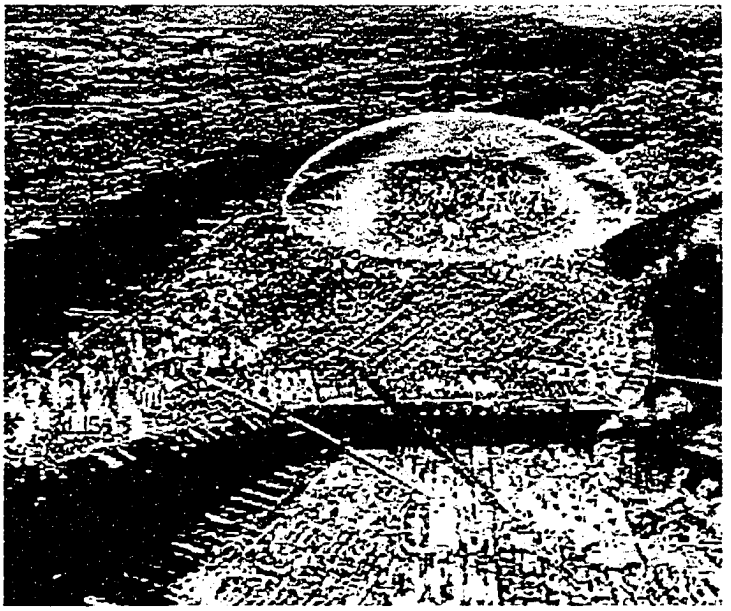


Figure 4.1. Buckminster Fuller. *Geodesic Dome over Mid-town Manhattan*. project (1962).

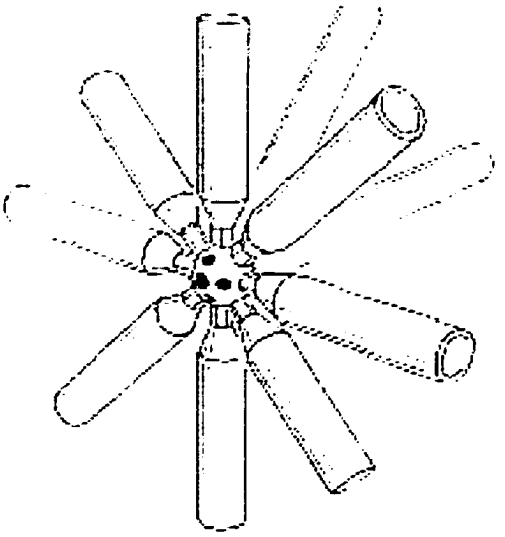


Figure 4.2. *The Mero System* (1943)

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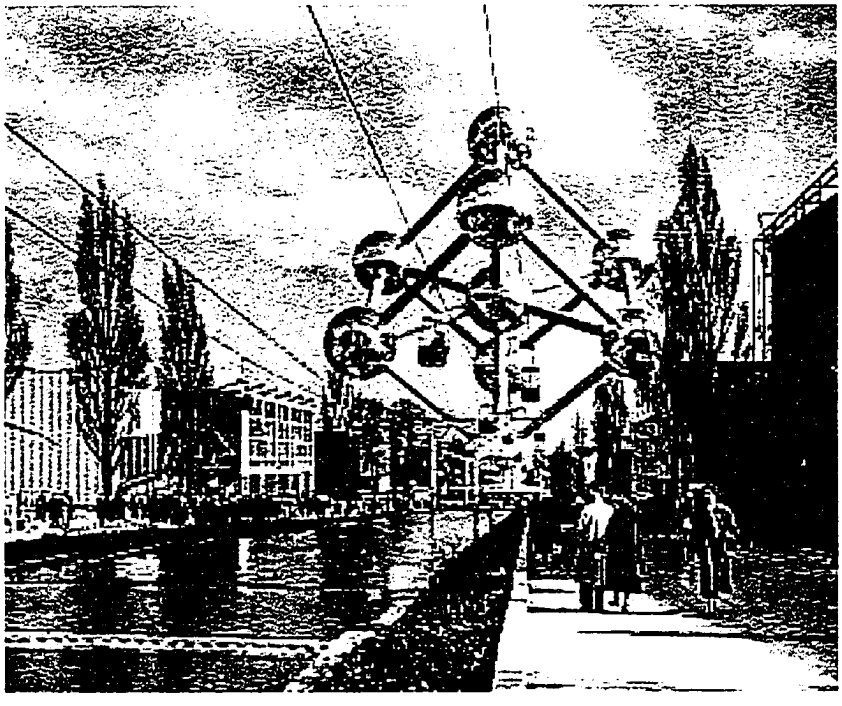


Figure 4.3. Pollack and Waterkeyn. *Atomium*. Brussels (1958).

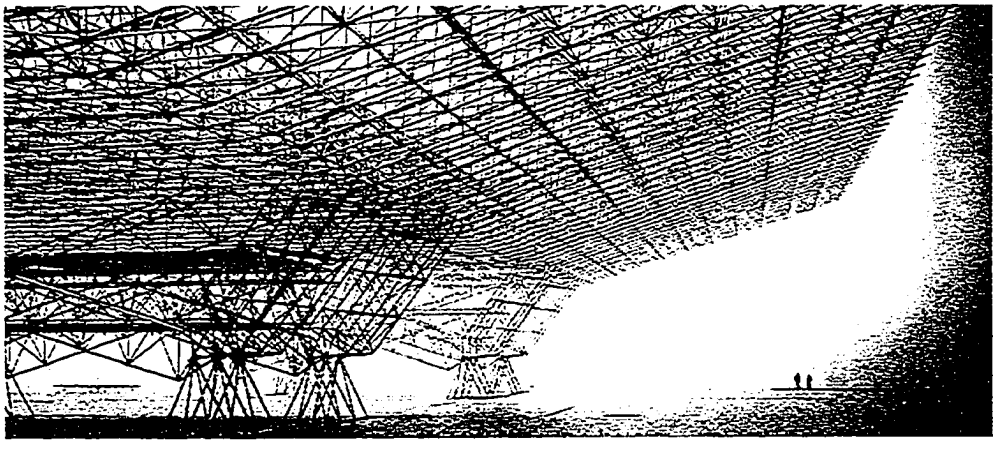


Figure 4.4. Konrad Wachsmann. *Structural System for Large Hangars* (1950-53): model.

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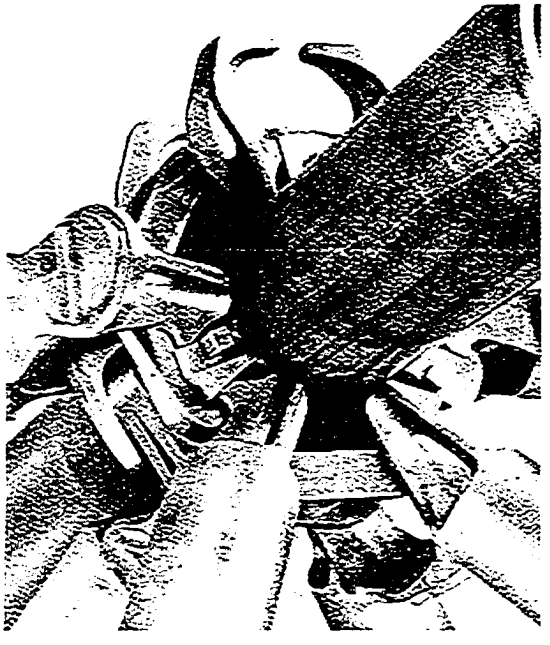


Figure 4.5. Konrad Wachsmann. *Structural System for Large Hangars* (1950-53): Node prototype.

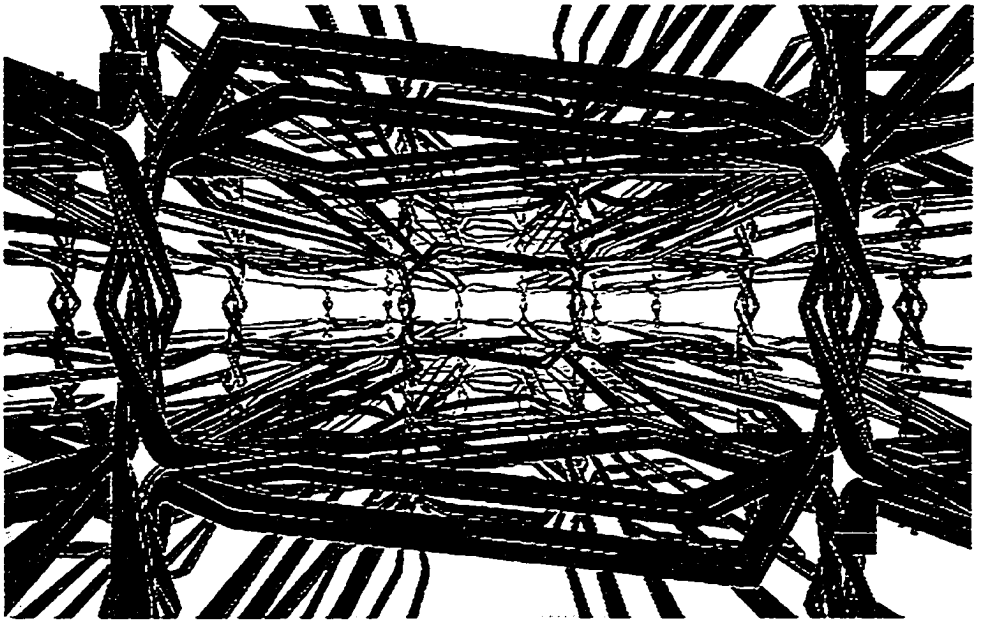


Figure 4.6. Kanrad Wachsmann. *Structural Study* (1953).

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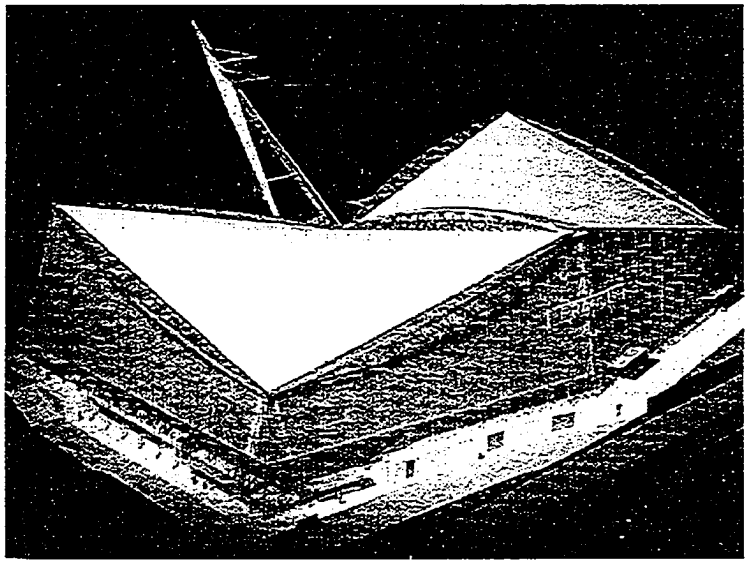


Figure 4.7. Guillaume Gillet and René Sarger, eng., *French Pavilion*, Brussels (1958).

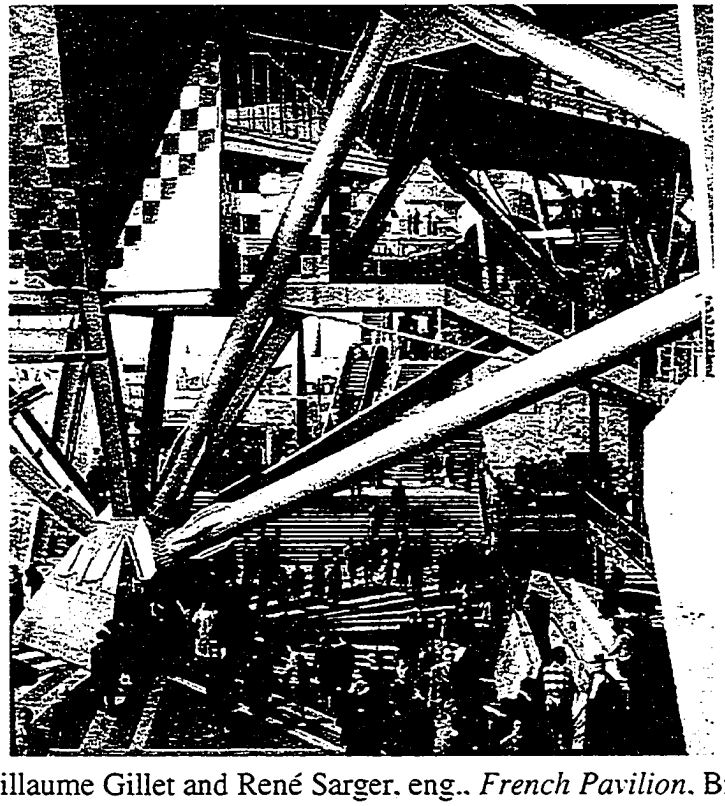


Figure 4.8. Guillaume Gillet and René Sarger, eng., *French Pavilion*, Brussels (1958): Interior view of the central support for the "mast."

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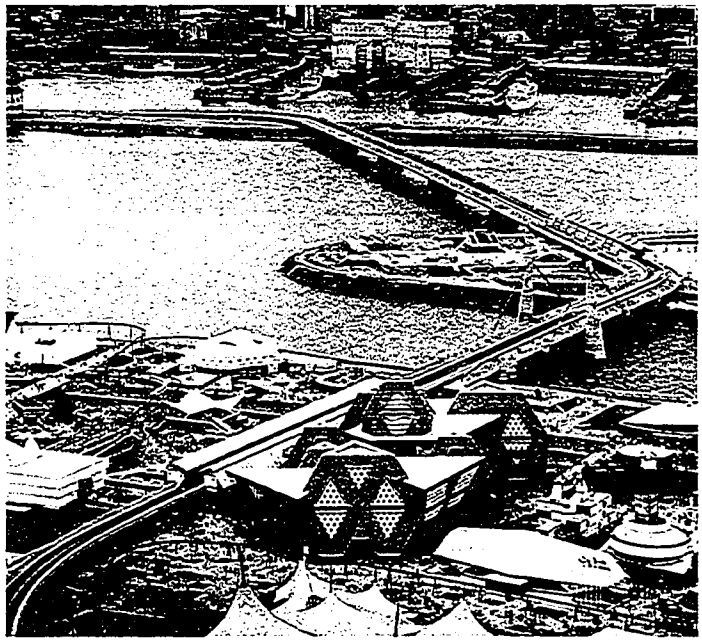


Figure 4.9. Aerial view of Montreal Expo '67, with the *Man the Producer* pavilion in the center.

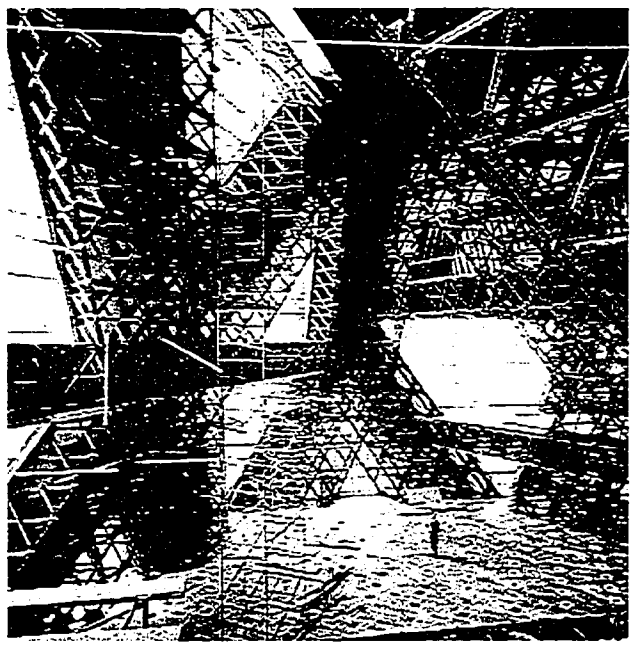


Figure 4.10. Affleck, et al., *Man the Producer* pavilion at Expo '67, Montreal (1967), interior view under construction.

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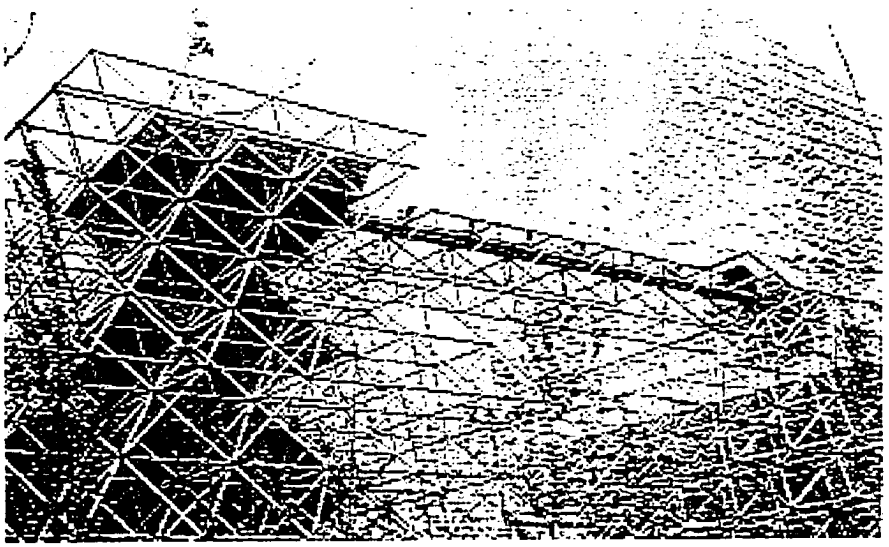


Figure 4.11. Kenny, et al, *Gyrotron*, Montreal (1967): view.

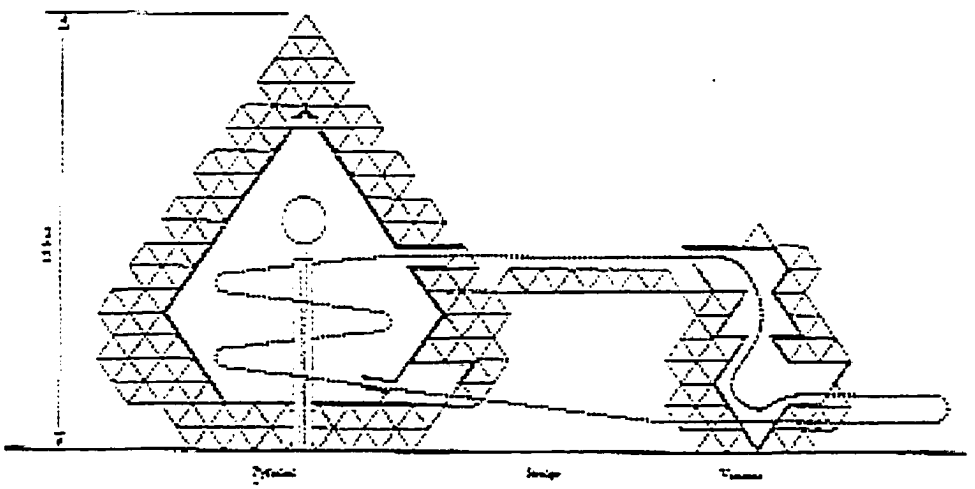


Figure 4.12. Kenny, et al, *Gyrotron*, Montreal (1967): elevation.

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Figure 4.13. Robert le Ricolais about 1960.

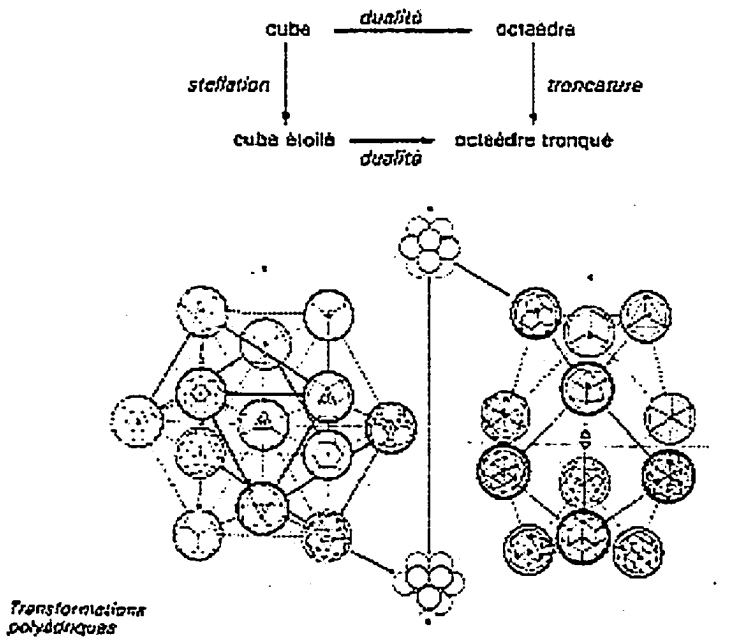


Figure 4.14. Relations of various polyhedra via topological operations: Truncation, Stellation, and Duality; from Marc Mimram, *Structures et formes*.

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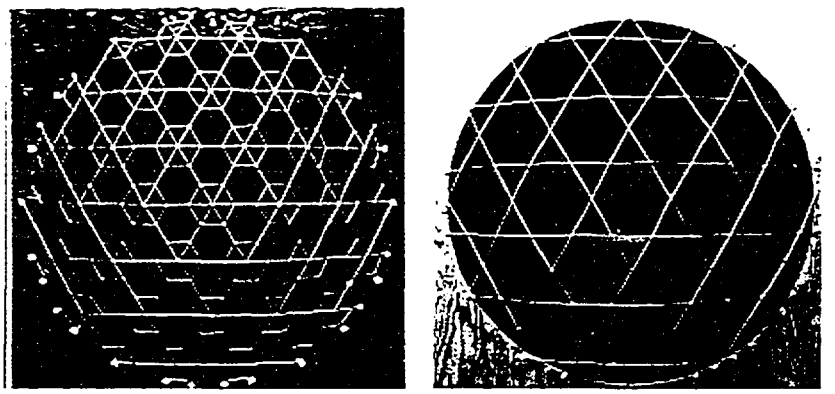


Figure 4.15. Robert le Ricolais, *Starhex* (r) and *Trihex* (l) dome systems (c. 1966).

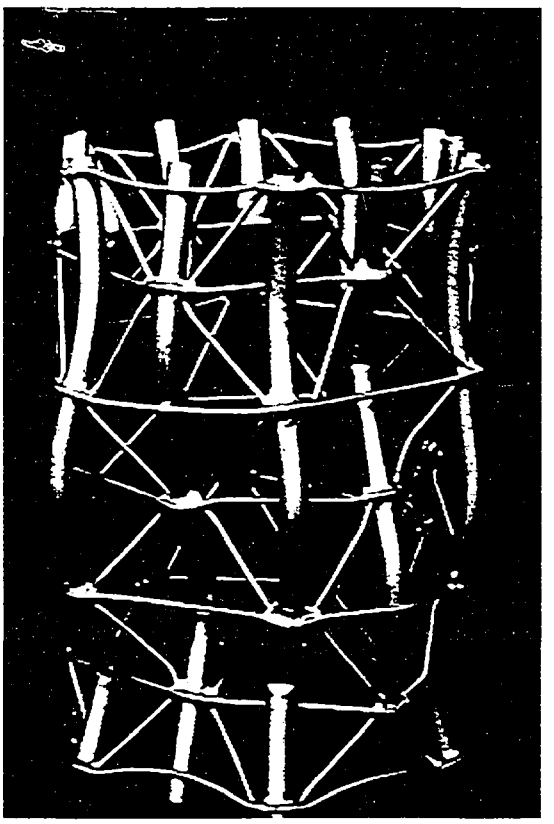


Figure 4.16. Robert le Ricolais,structural model (c. 1960)

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Figure 4.17. Robert le Ricolais, "monkey saddle" structure with weights attached.

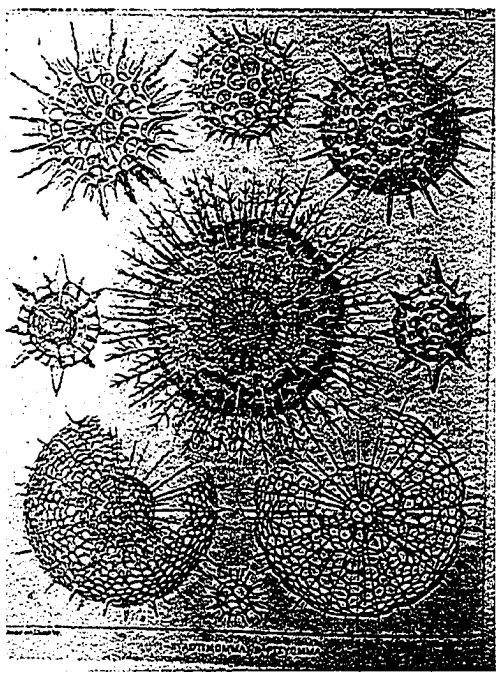


Figure 4.18. Ernst Haeckl, "Radiolaria," From *Voyage of the H.M.S. Challenger.*

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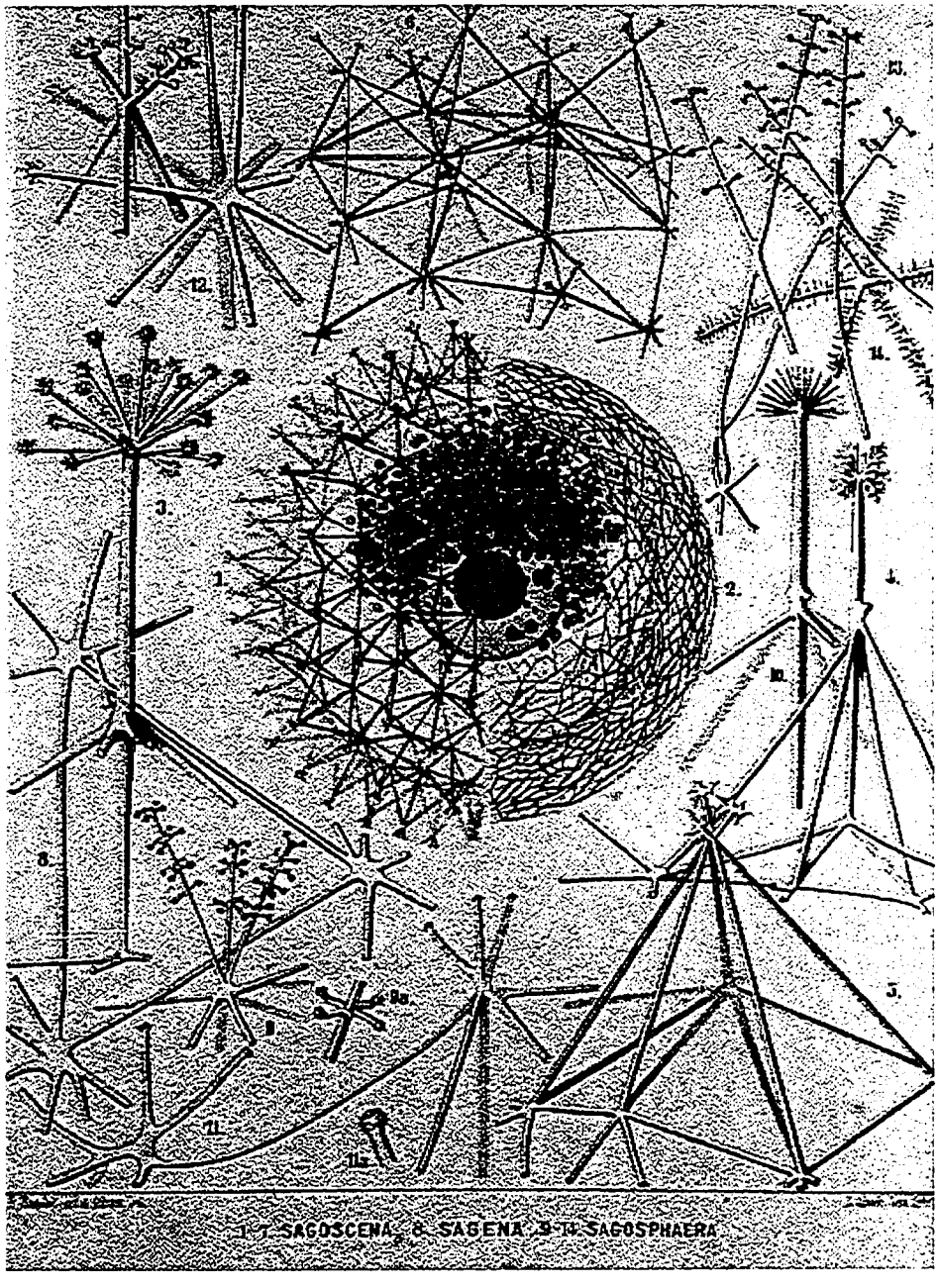


Figure 4.19. Ernst Haeckl, "Radiolaria," From *Voyage of the H.M.S. Challenger*.

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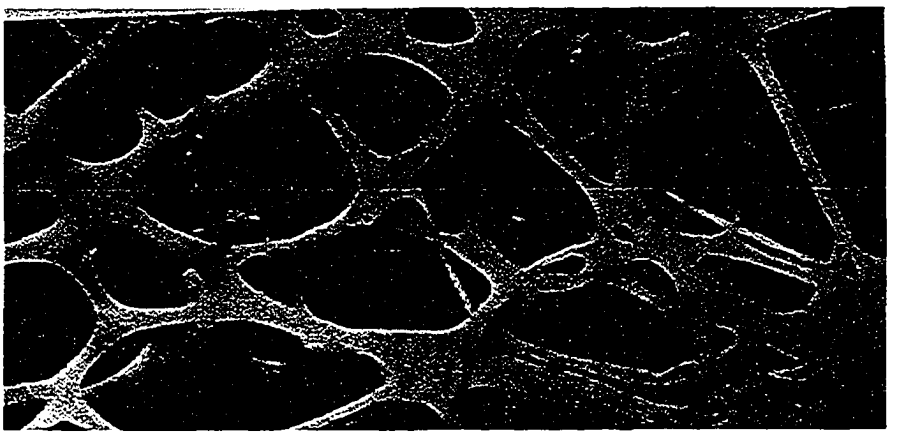


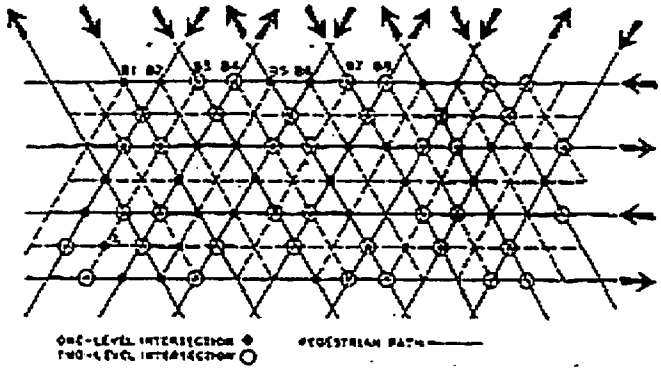
Figure 4.20. Photo of bone structure...



PLAIDOYER
POUR LES
CHERCHEURS

Figure 4.21. Page from Marc Gaillard, "*Plaidoyer pour les chercheurs*," in *Urbanisme* no.92 (1966), showing bone structure images

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	TRIREX				ORTHOGONAL			
	Length of path		Intersections		Length	Intersections		
	Car	Pedestrian	Total	2-level		Total	2-level	
AB1	6	5	3	2	6.53	6	3	
AB2	6	5	2	2	2.61	2	2	
AB3	5	5	4	2	4.53	4	2	
AB4	4	5	3	2	4.53	4	2	
AB5	7	6	6	2	6.53	6	4	
AB6	10	7	9	4	6.61	6	4	
AB7	9	8	8	3	8.53	8	6	
AB8	8	9	7	3	8.61	9	7	
					x1.61			

Figure 4.22. Robert le Ricolais, diagram comparing *Trihex* circulation system to the traditional orthogonal grid (1969)

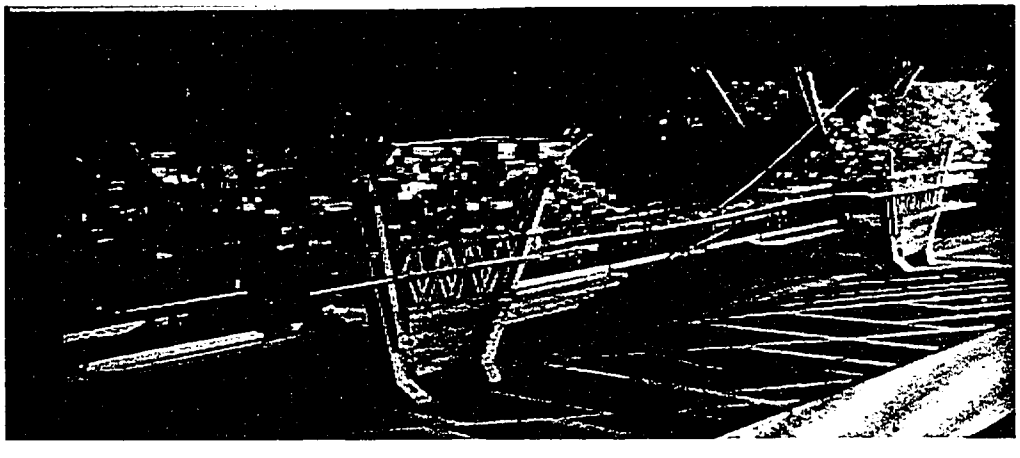


Figure 4.23. René Sarger, project for a "bridge city" over the *Péripherique* (c. 1973).

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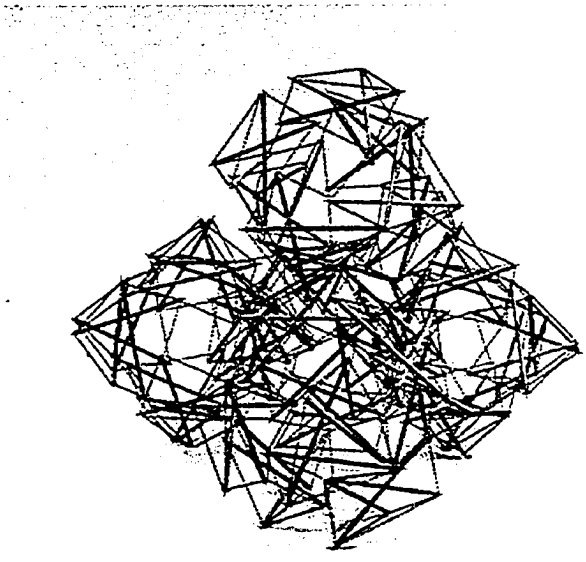


Figure 4.24. David G. Emmerich. Tensegrity model with wood and chain (c. 1966)

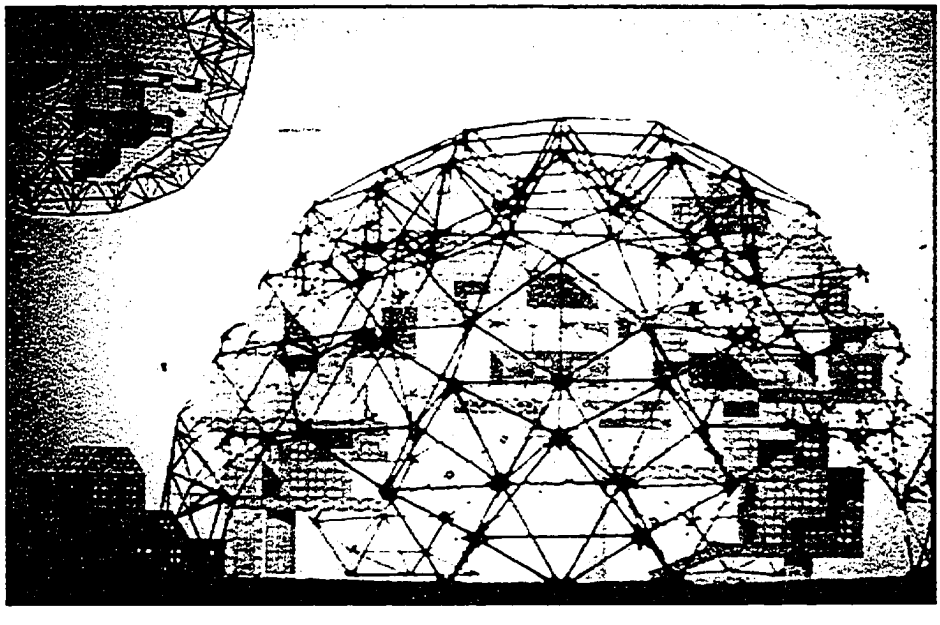


Figure 4.25. David G. Emmerich. *Agglomeration underneath a stereometric dome* (c. 1968)

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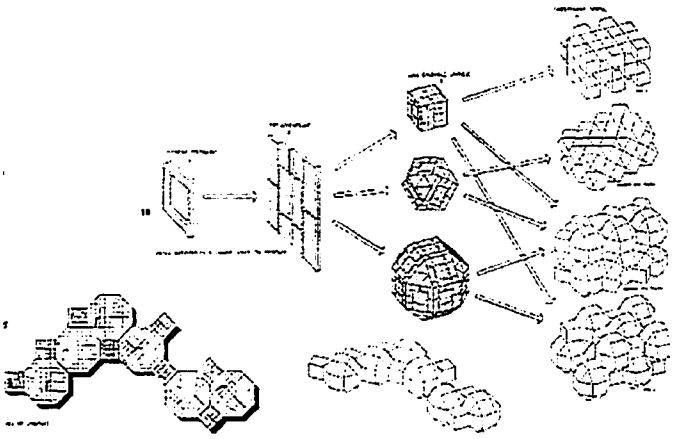


Figure 4.26. David G. Emmerich. *Construction Games* (c. 1968): structural and combinatory principles.

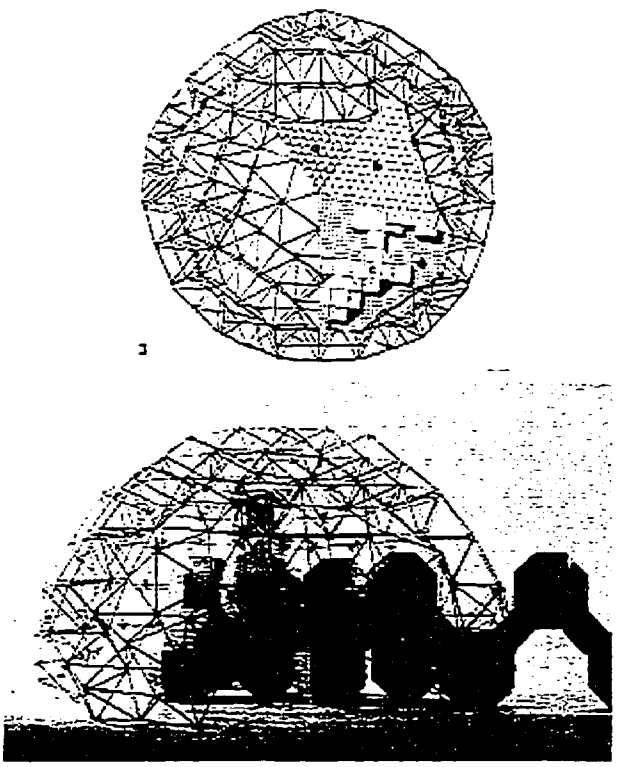


Figure 4.27. David G. Emmerich. *Construction Games* (c. 1968): Plan and model of cells stacked underneath a structural dome.

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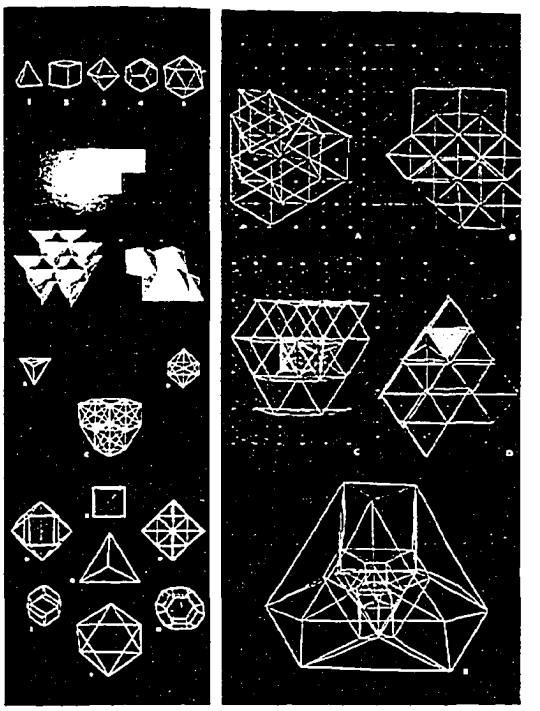


Figure 4.28. Eckhard Schulz-Fielitz, polyhedral and grid studies: models (c. 1961).

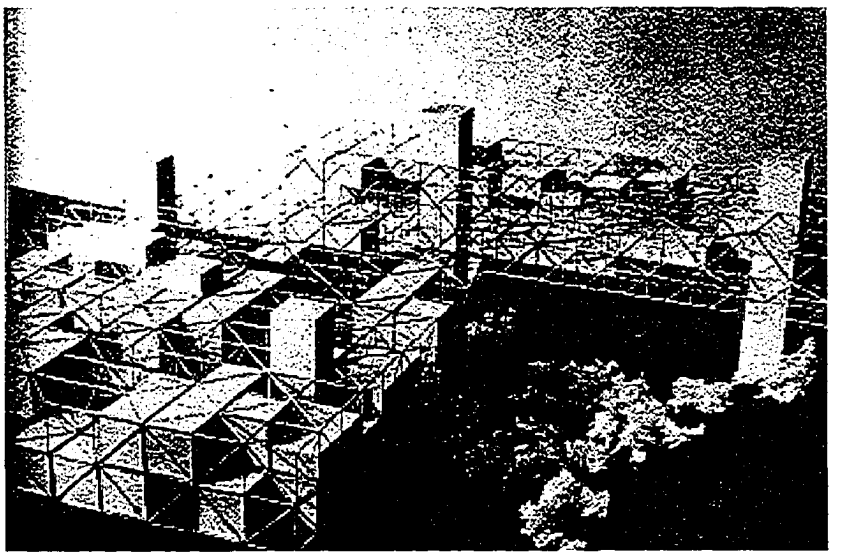


Figure 4.29. Eckhard Schulz-Fielitz, study for an urban agglomeration (c. 1964): model.

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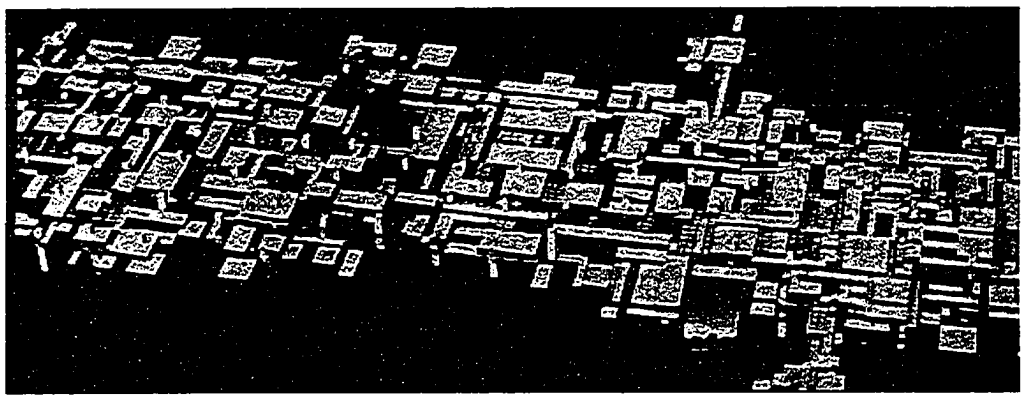


Figure 4.30. Eckhard Schulz-Fielitz, study for an urban agglomeration, suitable for construction on uneven ground (c. 1964): model.

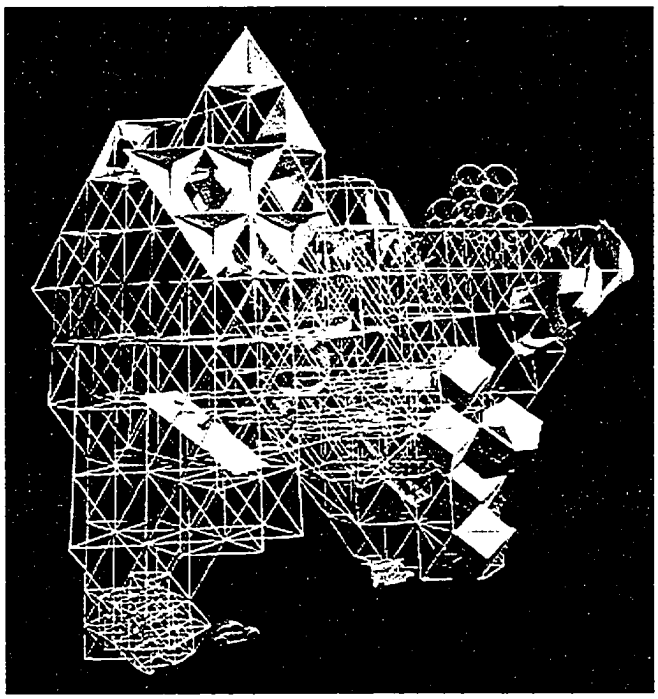


Figure 4.31. Eckhard Schulze-Fielitz, *Spatial City* (c. 1960): model.

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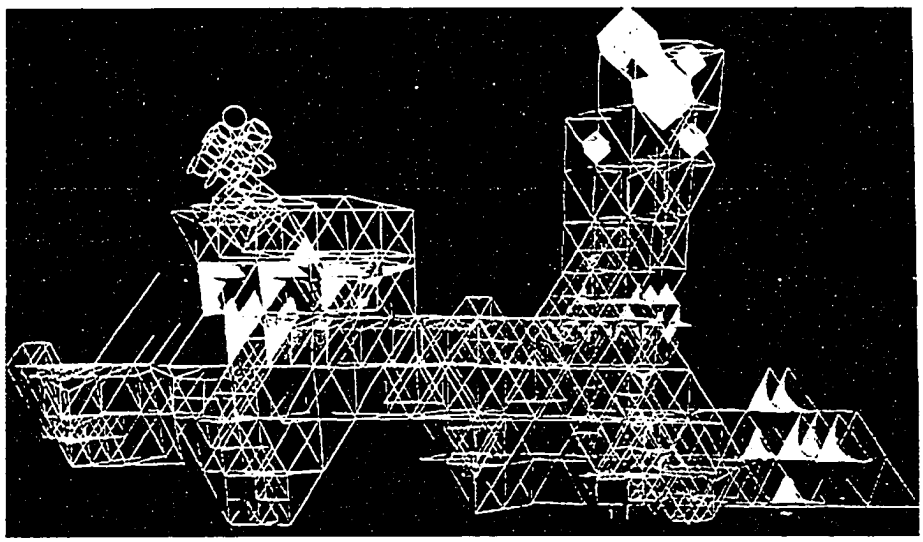


Figure 4.32. Eckhard Schulze-Fielitz, *Spatial City* (c. 1960): model.

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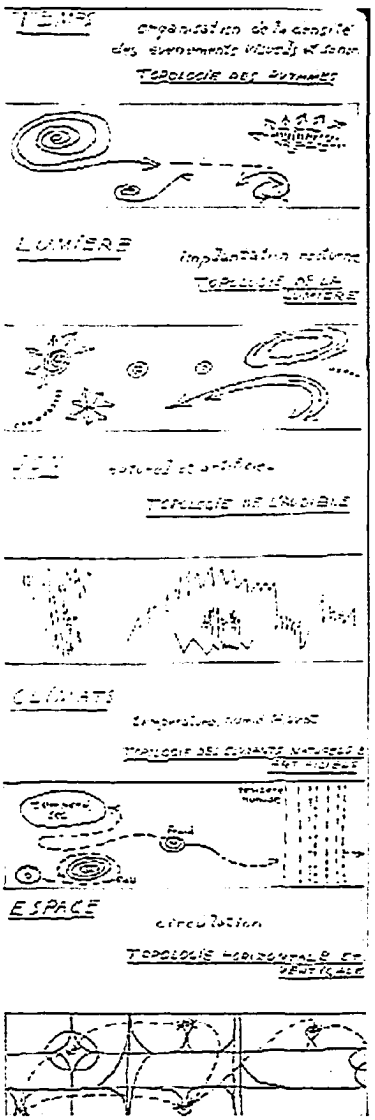


Figure 4.33. Nicolas Schöffer, *The Five Topologies* (c. 1964).

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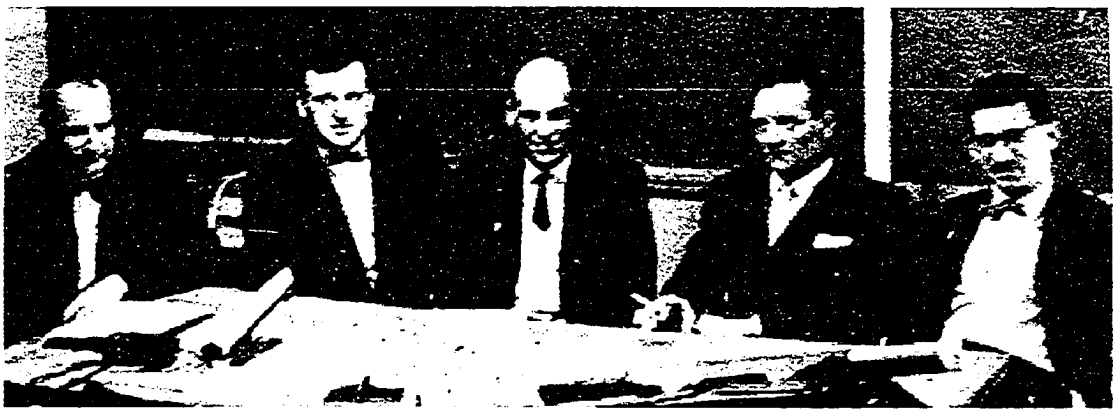


Figure 2.34. Members of the GEAM. left to right: Ruhnau. Günschel.Friedman. Frieden. Emmerich (c. 1958).

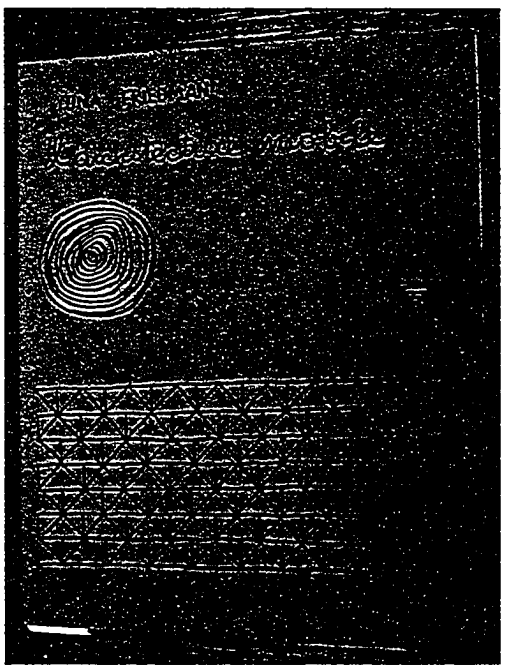


Figure 4.35. Yona Friedman. *L'architecture mobile* (1958).

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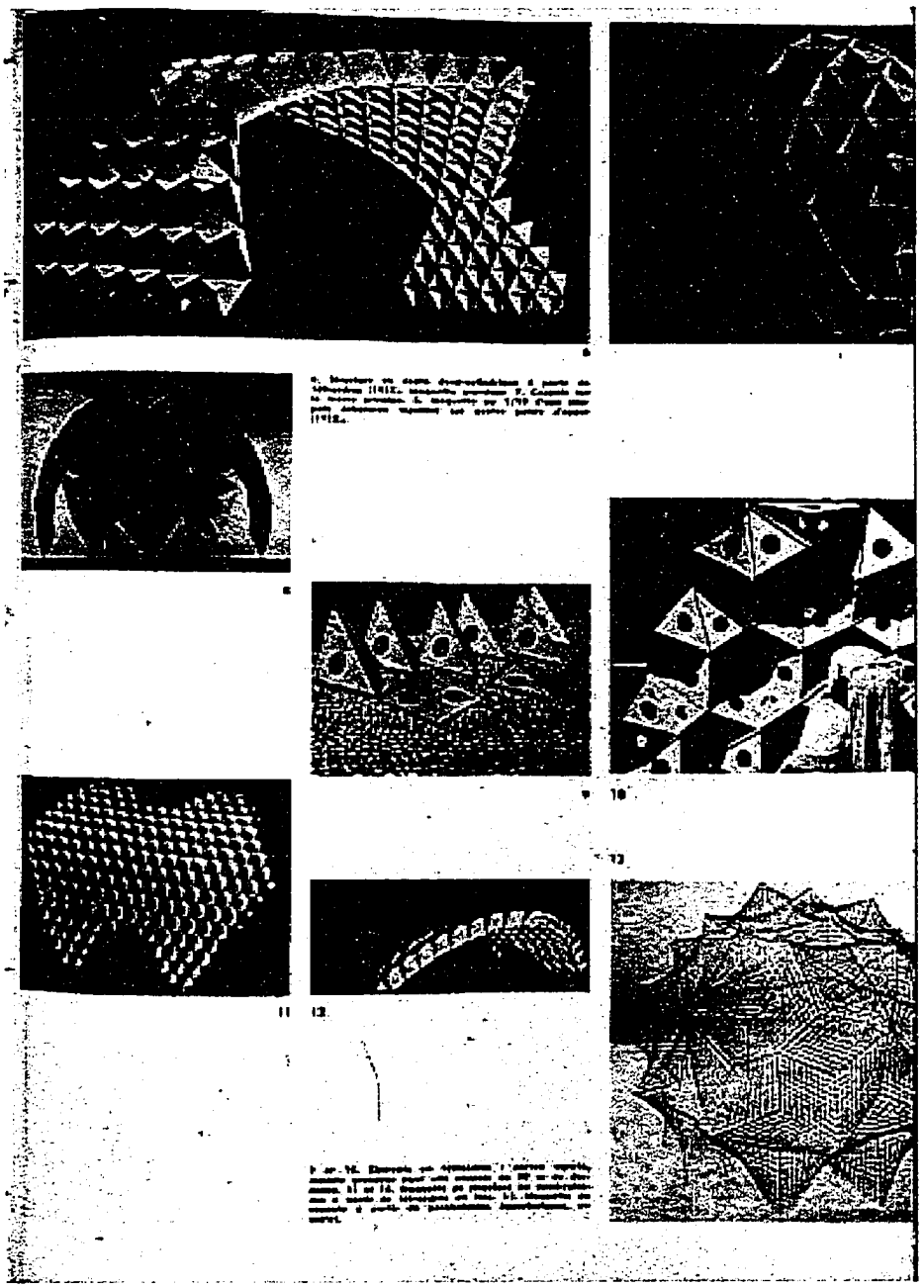


Figure 4.36. Gunther Günschel, various projects as published in *L'architecture d'aujourd'hui*, vol. 28 (1957).

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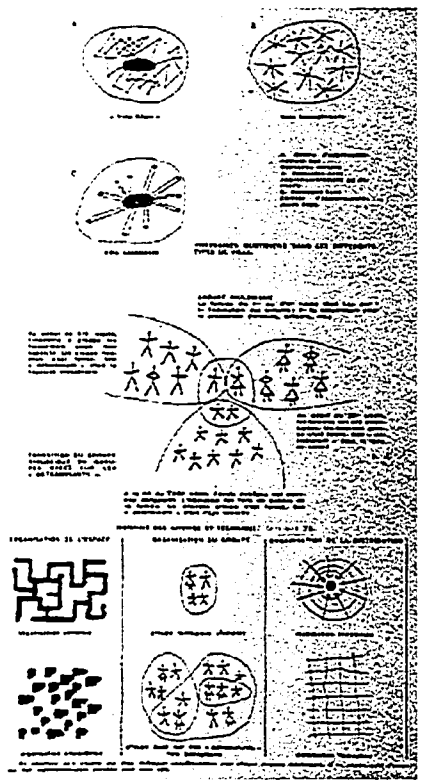


Figure 4.37. Yona Friedman, schematic drawing illustrating Friedman's notion of "comprehensive systems" (c. 1964).

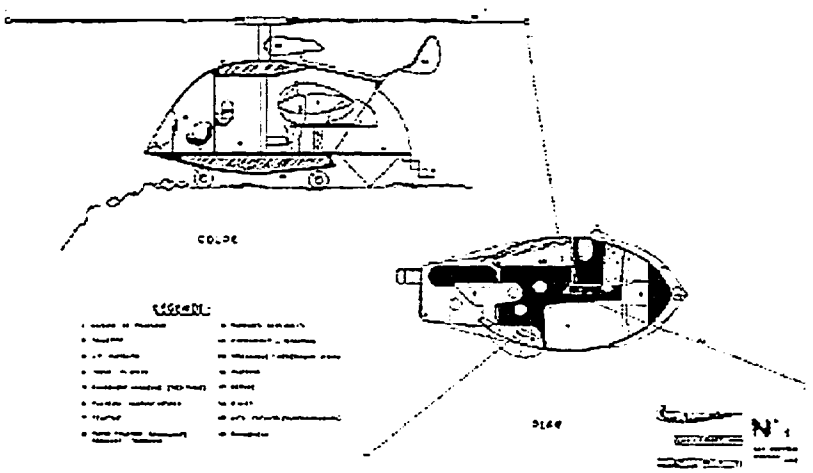


Figure 4.38. Guy Rottier, *Flying Vacation House* (1964).

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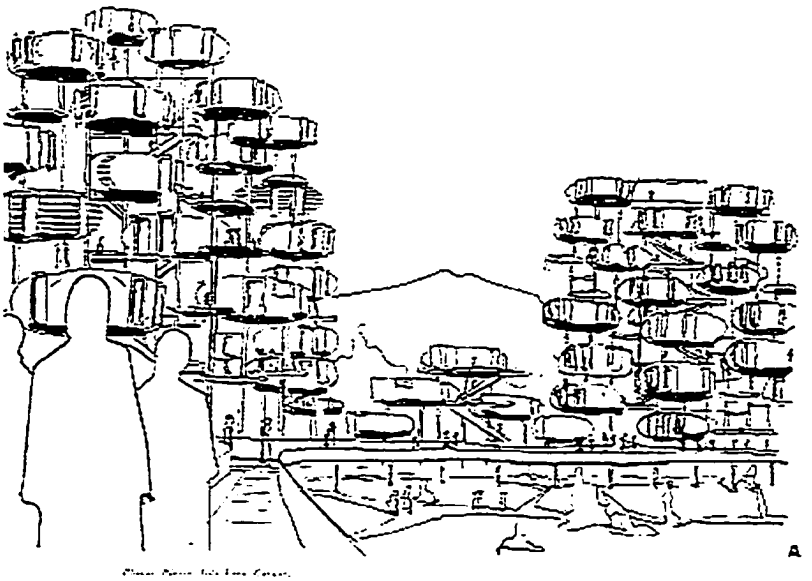


Figure 4.39. Pascal Hausermann. *Perspective of a Quarter* (c. 1960)

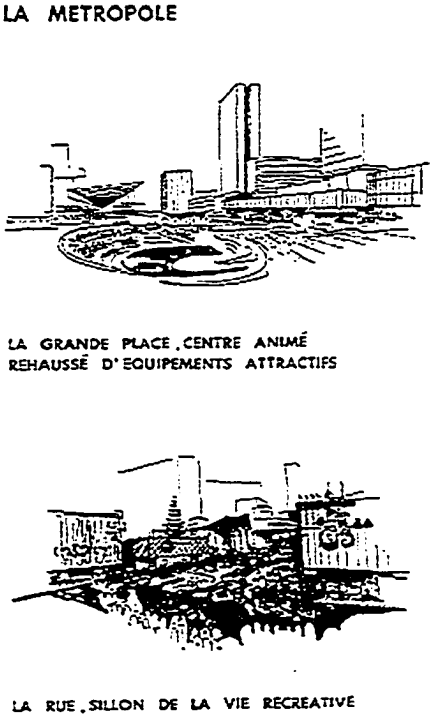


Figure 4.40. From: Joffre Dumazedier and Maurice Imbert. *Espace et loisir* (1967).

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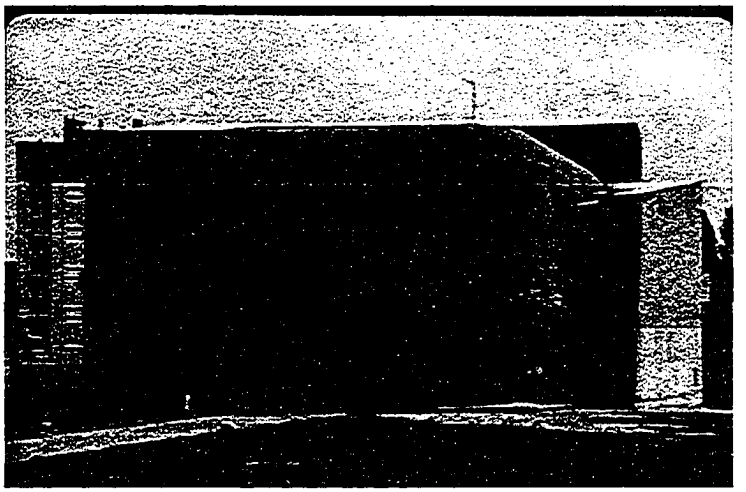


Figure 4.41. Claude Parent and Paul Virilio. *Church of St. Bernadette*. Nevers (1964-66): photo Larry Busbea.

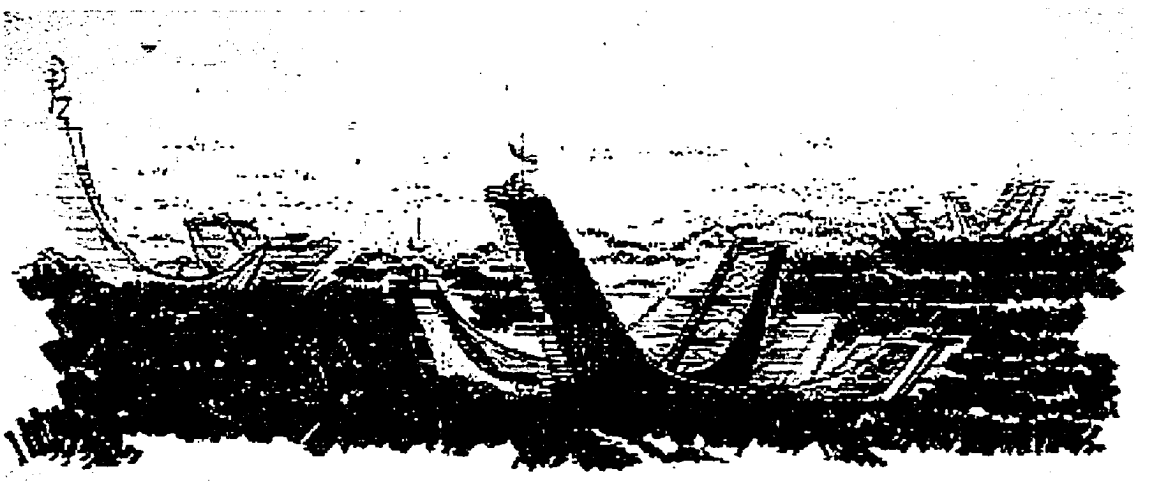


Figure 4.42. Claude Parent. *Turbosite* (1963).

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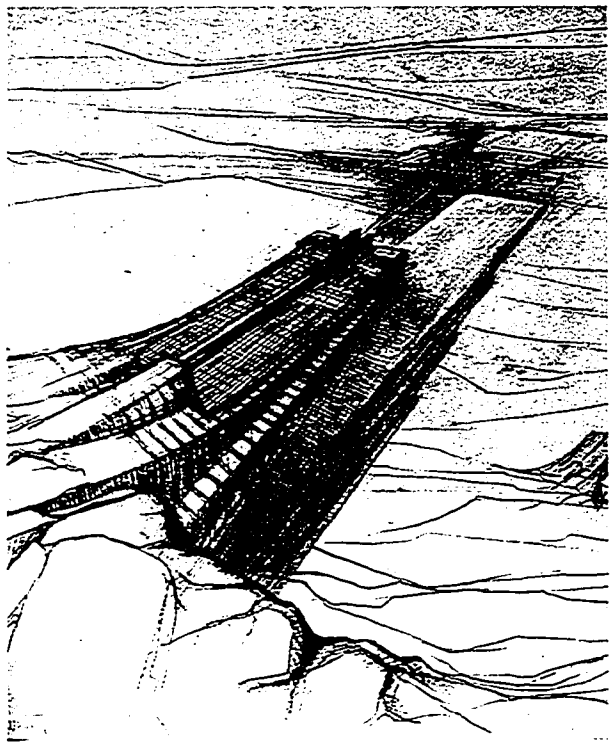


Figure 4.43. Parent and Virilio. *Vague* [wave] (1966).

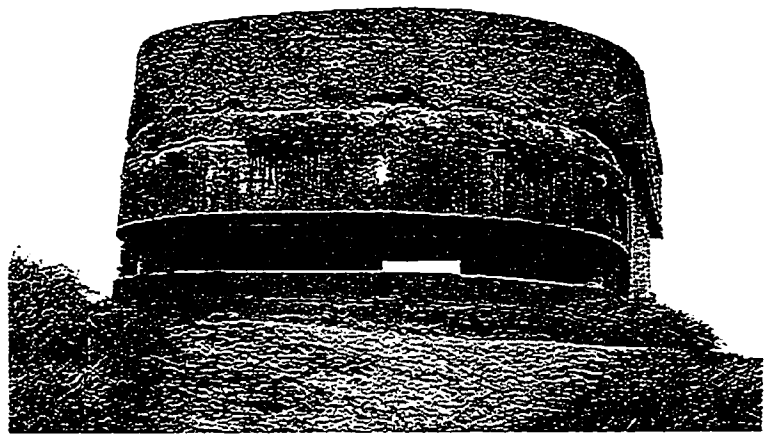


Figure 4.44. Paul Virilio. *Look-out on the Atlantic* (1958).

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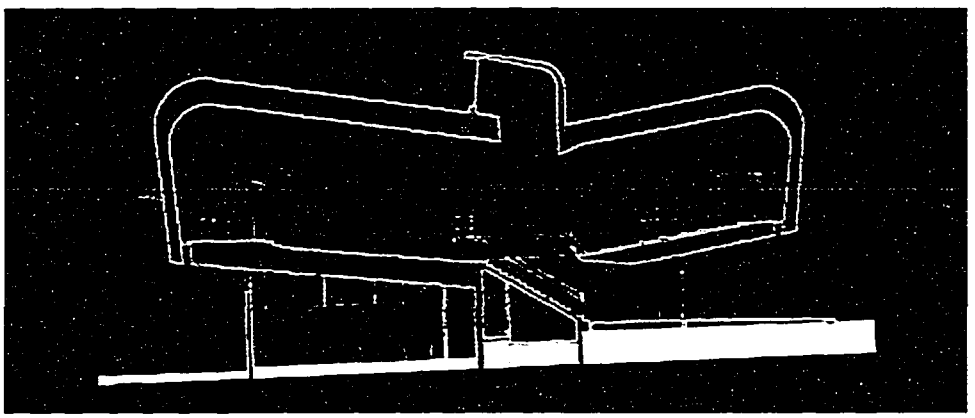


Figure 4.45. Claude Parent and Paul Virilio. *Church of St. Bernadette*, Nevers (1964-66): section.

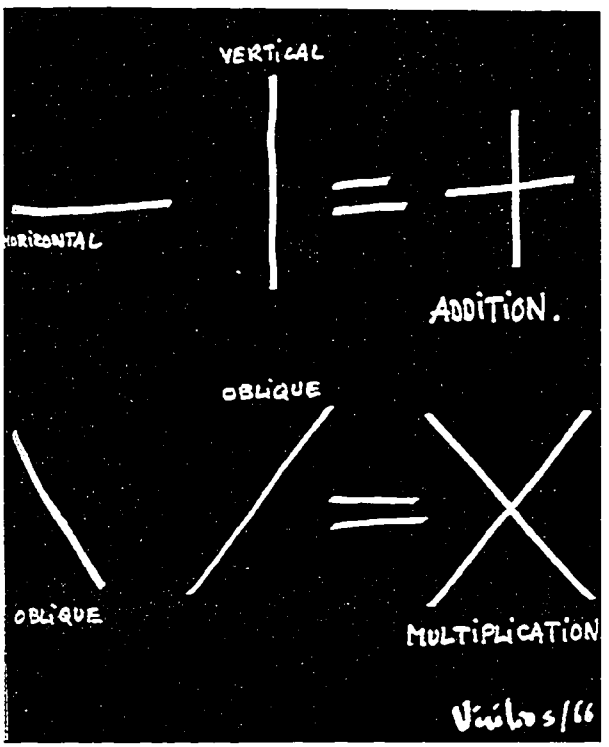


Figure 4.46. Paul Virilio. *Function of the Oblique* (1966).

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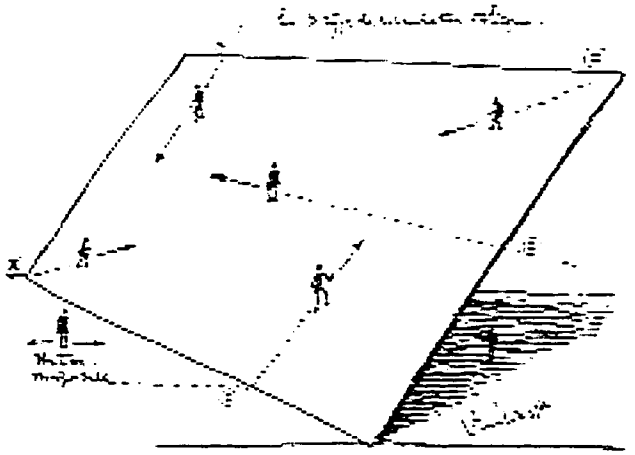


Figure 4.47. Paul Virilio. *Habitable Circulation* (1966).

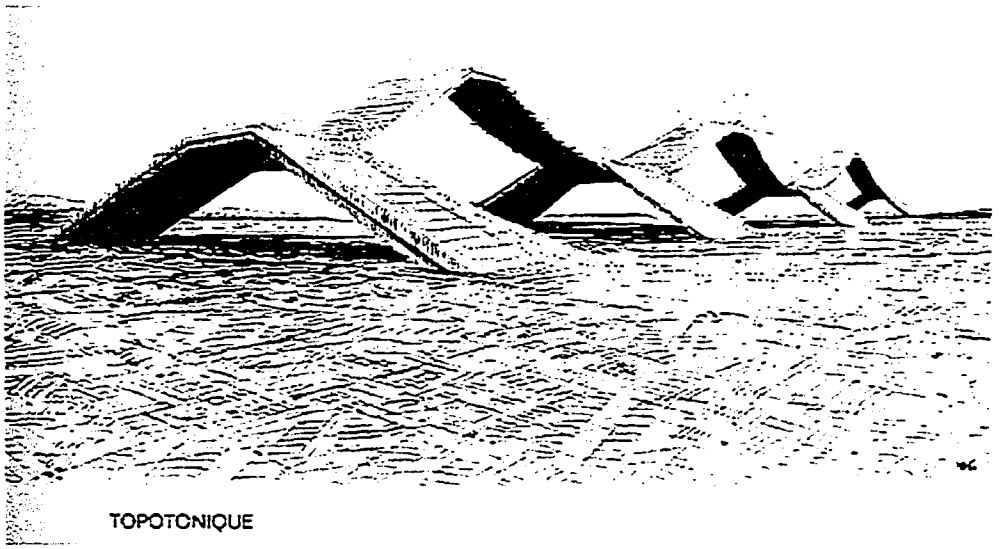


Figure 4.48. Parent and Virilio. "Topotonique" (1967).

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Figure 4.49. Claude Parent and André Bloc. *Urbaina* project for a car (1962): model.

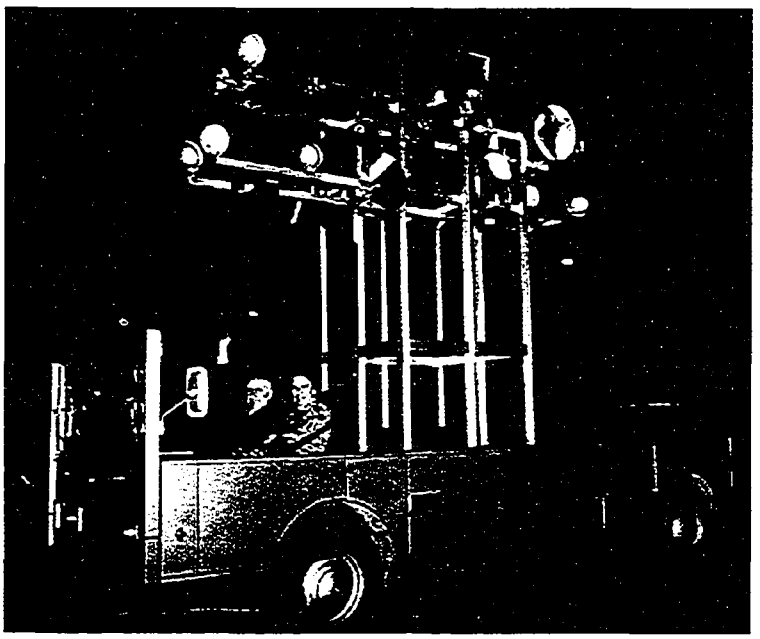


Figure 4.50. Nicolas and Eléanor Schöffer in *Scam I* (1972).

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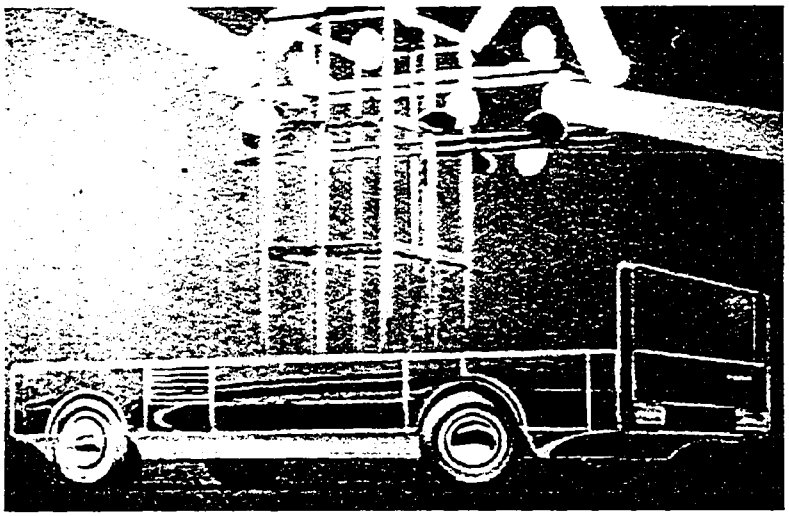


Figure 4.51. Nicolas Schöffer. *Scam I* (1972): rendering.

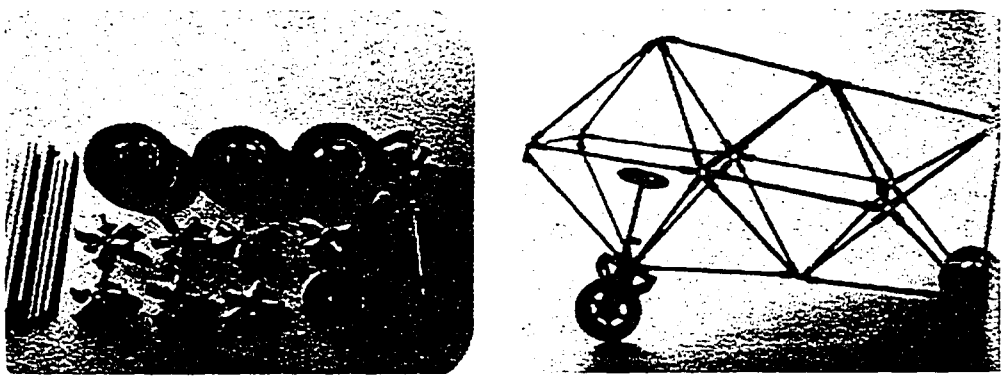


Figure 4.52. D.G. Emmerich. *Deltamobiles* (1966).

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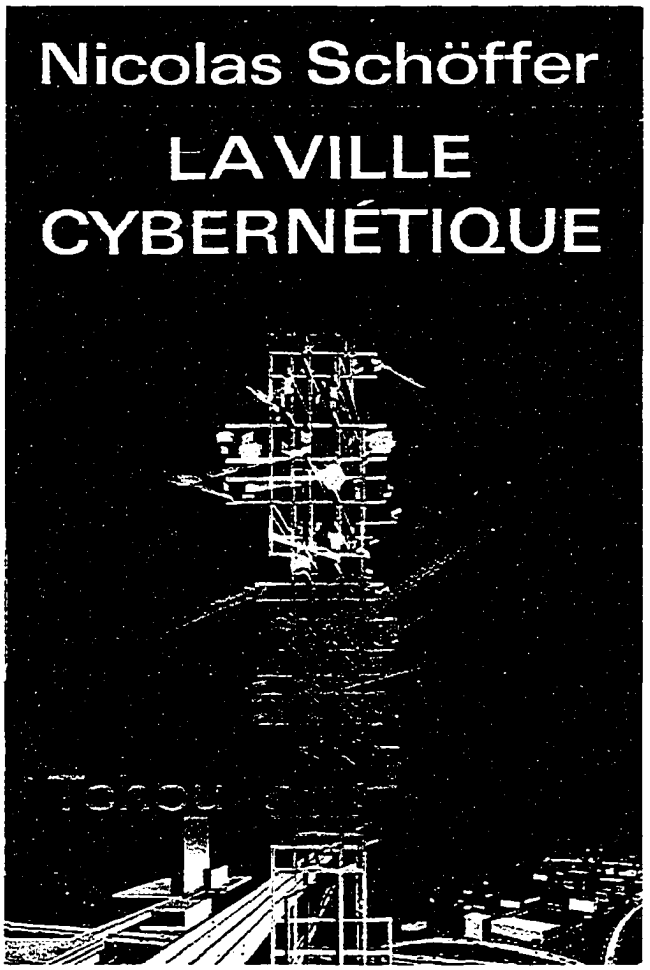


Figure 5.1. Nicolas Schöffer. *La ville Cybernétique* (1969)

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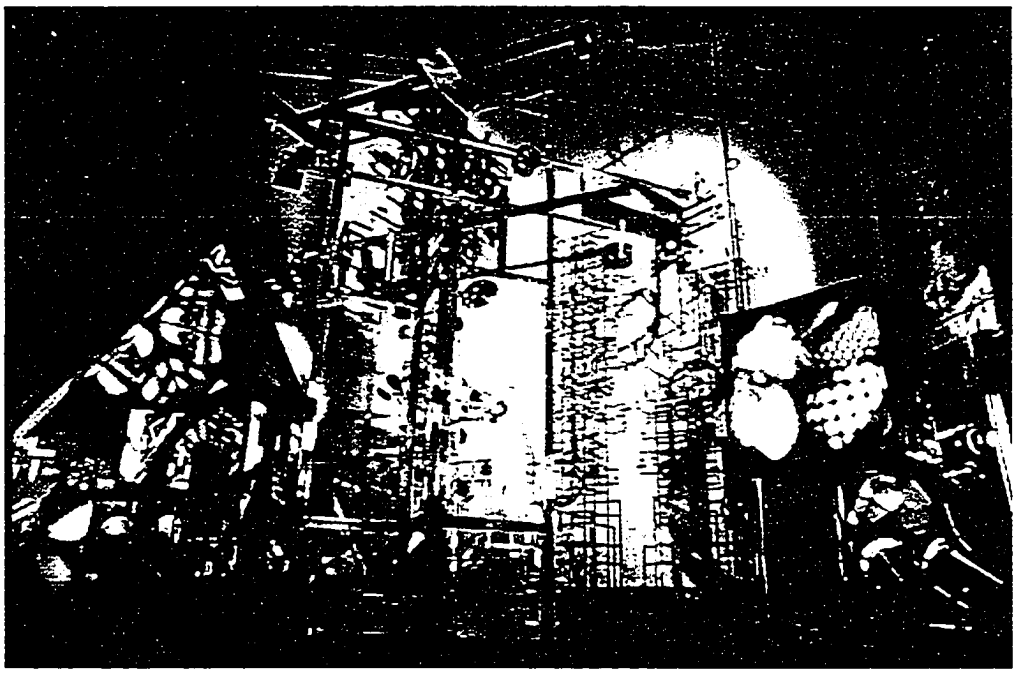


Figure 5.2. View of Schöffer's studio with various cybernetic sculptures illuminated.

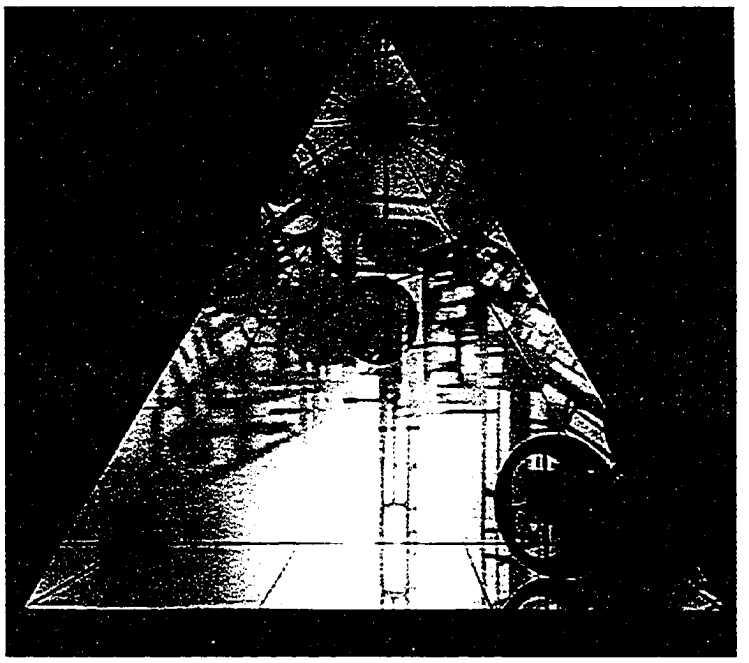


Figure 5.3. Nicolas Schöffer, *Prisme* (1964)

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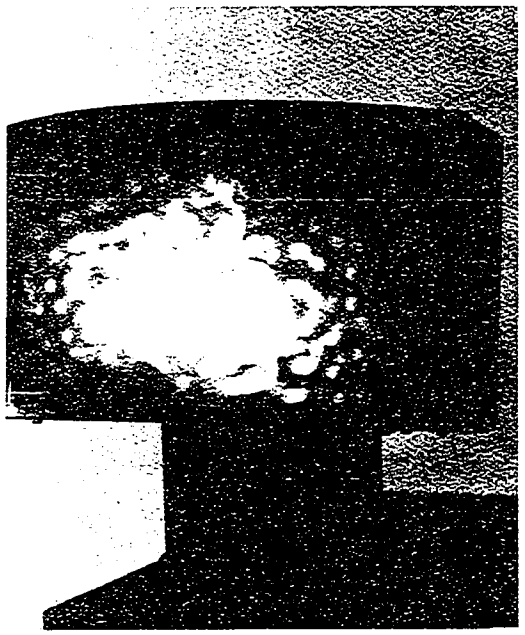


Figure 5.4. Nicolas Schöffer. *Le Lumino* (1958-1968).

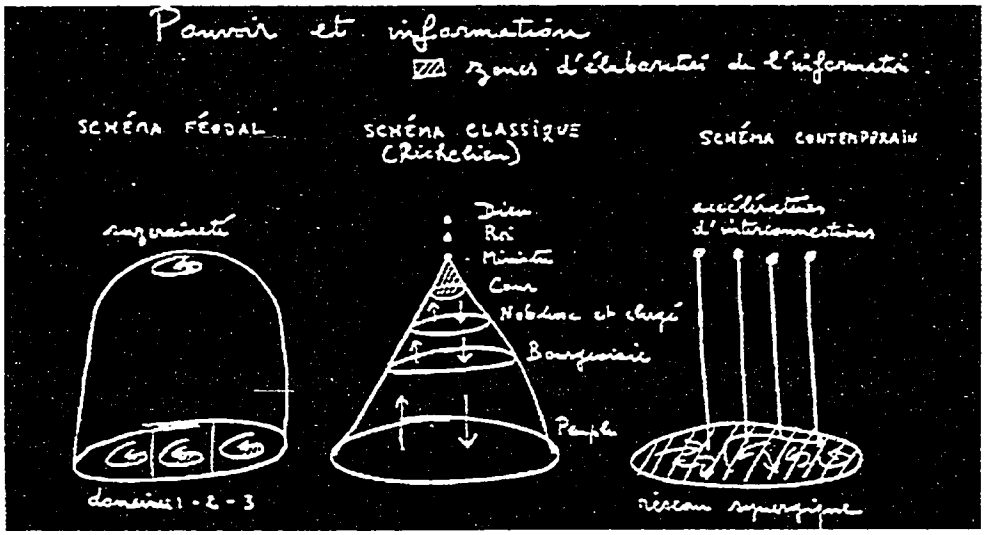


Figure 5.5. "Power and Information." From Henri Van Lier. "Architecture Synergique." (1968): this sketch shows the schematic formulation and movement of information in different historical epochs.

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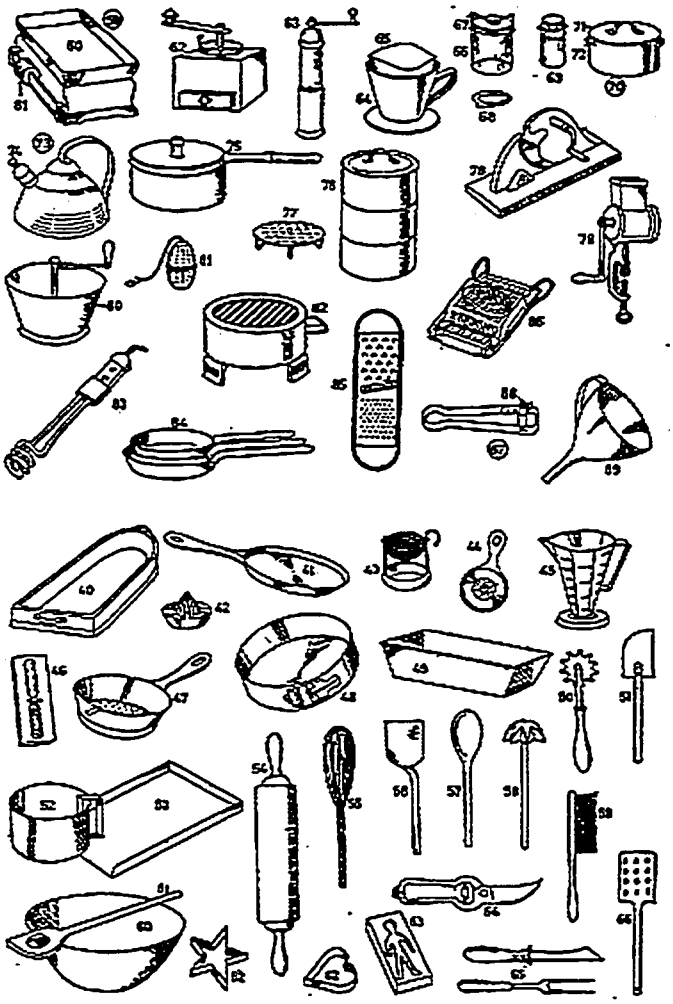


Figure 5.6. From Abraham Moles, *Théorie des objets*.

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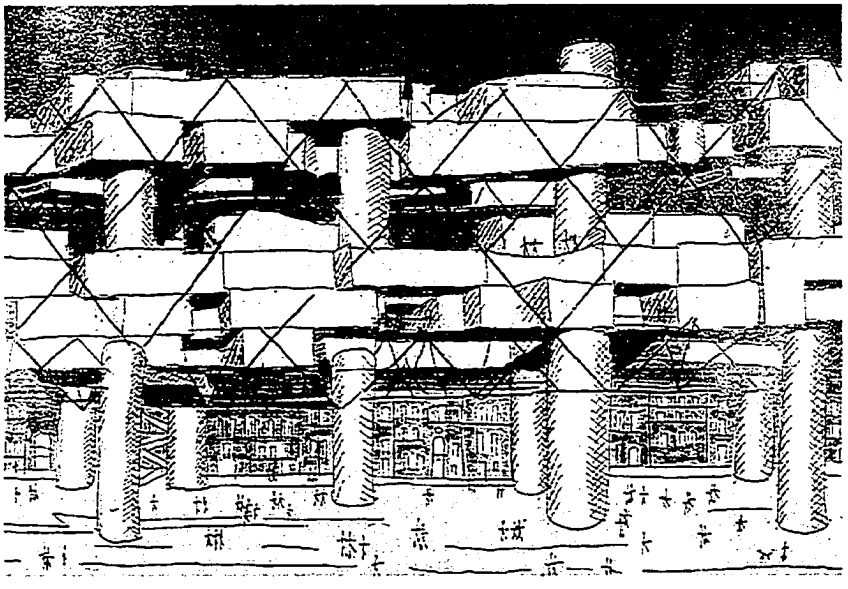


Figure 5.7. Yona Friedman, competition entry for the Centre George Pompidou (1970)

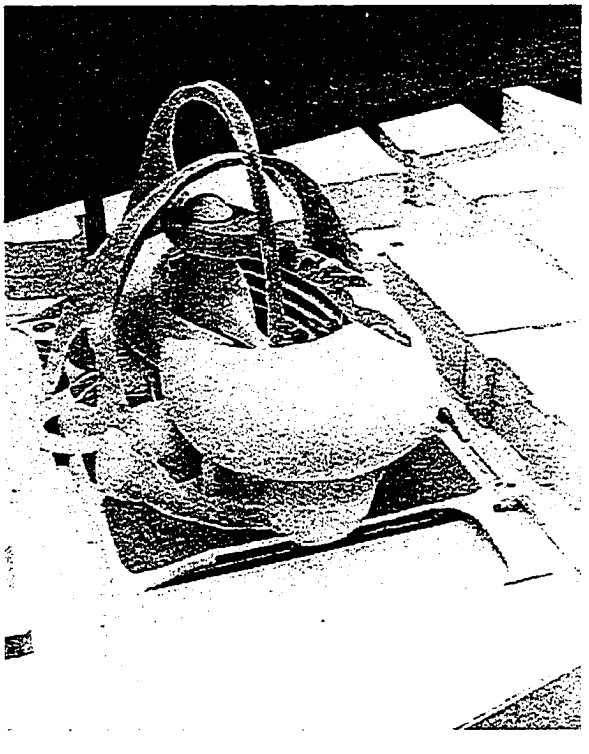


Figure 5.8. Chanéac, Competition Entry for the Centre George Pompidou (1970)

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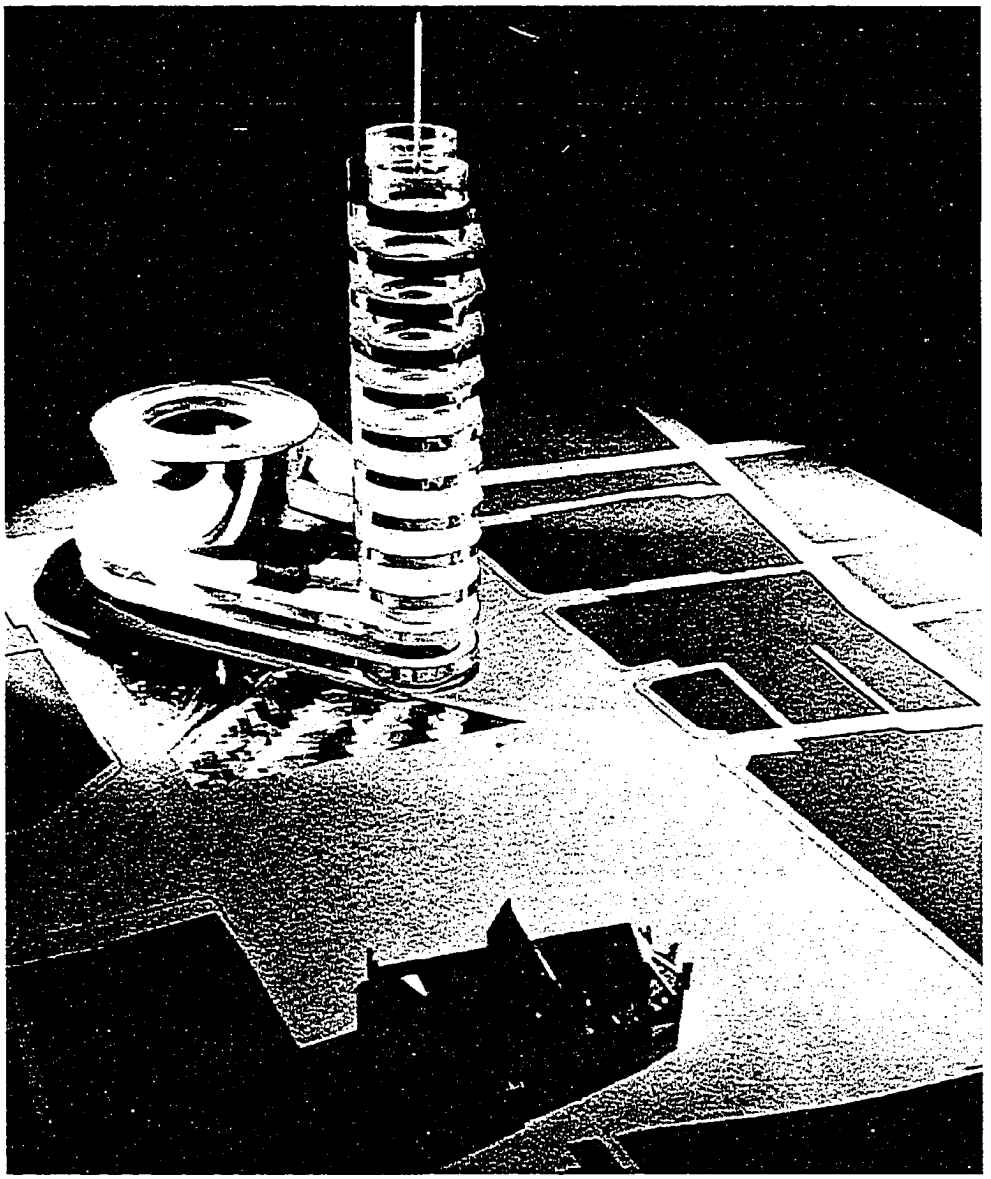


Figure 5.9. Nicolas Schöffer, Competition
Entry for the Centre George Pompidou (1970)

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