# REINVENTING THE COLLECTIVE FOR ETHICAL DESIGN

**The Theoretical Confluences of Fumihiko Maki's "Collective Form" and Thom Mayne's "Combinatory Urbanism"**

Colleen Chiu-Shee

The 1950s and 1960s were a transitional era when the architecture field saw the ideological shift from principles of High Modernism to human-oriented concerns. The shift gained momentum in concomitance with the rise of urban design as a new academic discipline. This era also encompassed the formative years of Fumihiko Maki, a globally renowned Japanese architect and the 1993 Pritzker Prize winner, who went to the United States to study architecture after witnessing the post-World War II transformations in Japan. Maki reflected on his life experiences and world travels during his formative years and consolidated his thoughts in the book *Investigations in Collective Form* (1964). Maki's notion of Collective Form is not only a manifestation of his cross-cultural education and practice in architecture and urban design, it also includes design philosophies that have lasting impact in the fields that concern the built environment. Maki's theories were influential on Thom Mayne, another globally renowned architect based in the United States and the 2005 Pritzker Prize winner. Mayne also developed his architectural education and practice during a transitional era with changing ideologies in architecture and politics. Mayne expands on Maki's notion of Collective Form and illustrates his design philosophies in the book *Combinatory Urbanism: A Realignment of Complex Behavior and Collective Form* (2011).

Maki and Mayne express parallel understandings of the built environment and underlying human systems that transcend disciplinary, cultural, geographic, and time limitations. Their discourses about the "collective" involve confluences in multiple dimensions: the confluence of design-related fields with increasing elusive boundaries of academic disciplines, the confluence of Eastern and Western ideologies, and the confluence of traditional and modern concerns and design methods. This essay contextualizes Maki's and Mayne's design philosophies in their formative years and discusses important ideas at the confluences of their theories. These ideas point to an ambiguous, yet adaptive quality essential in their ideologies. Revisiting their notions of the "collective" unearths their shared sociopolitical values, centered on adaptability, sustainability and equity in solutions to complex societal problems. Design principles

1    Fumihiko Maki, "Exploration of Urban Design
     Language," *Fumihiko Maki,* Phaidon, 2009, 16;

and practices aiming at collective good emphasize the potential for design to engender social-political changes, evoke the rethinking of architectural practice and education, and provide enduring lessons about design ethics for today's diversifying fields of environmental design.

## MAKI'S UNIQUE EXPERIENCE DURING HIS FORMATIVE YEARS

Maki is one of the few Japanese architects of his generation to receive deep influences from international cultures. From 1952 to 1965, Maki studied, taught and practiced architecture in America and traveled around the world, before returning to Japan and starting his own practice. Maki regards this period as his "formative years" and considers living in America as his "journey to the west." Trained mainly as a modern architect, Maki also studied urban design at Harvard University and taught at Washington University in St. Louis (WUSTL) during the early 1960s. The fusion of East-West and local-global influences undergirds his forward-looking ideologies. His architecture integrates local cultures and traditions with contemporary materials and technologies.

Maki's academic mentors—Kenzō Tange and Josep Lluís Sert—strongly influenced his views on architecture and the city. At Tange Lab in the University of Tokyo, Maki learned about Walter Gropius's work at Harvard Graduate School of Design (GSD) through reading *L'Architecture d'Aujourd'hui* and adopted a very rational approach to problem solving and form-making. In the early 1950s, Tokyo was still recovering from the devastation of WWII while America was rising as one of the epicenters for architecture. In particular, Harvard and MIT had become the birthplace of innovation through the fusion of various ideas transplanted from elsewhere, especially Europe. Later, when Maki attended the GSD, the school was shifting from the Bauhaus ethos under Gropius's deanship to an emphasis on urbanism advocated by Sert. Maki's studies at these two institutions are fundamental to his formation, during which he developed growing interests in "the issue of identity in a mass society and the search for ways in which cities might accommodate distinctive places."[1] The postwar social-cultural conditions inspired his explorations of the relationship between architecture and the city and between parts and the whole in urban complexes.

Maki grounds his concerns about architecture and the city in humanistic philosophies, yet his approach to addressing socio-cultural problems hinges on formal explorations. This approach resonates with the ethos of the first American school that Maki attended—the Cranbrook Academy of Art. Eliel Saarinen, who insists that searching for form is a fundamental approach to artful creations, designed the Cranbrook campus and

2    Fumihiko Maki, Nurturing Dreams: Collected
     Essays On Architecture And The City, The MIT
     Press, 2008, 11;

largely shaped its ethos. Maki was impressed by the campus and read about Saarinen's notion. Saarinen might have indirectly stimulated Maki's curiosity in understanding and inventing the form of urban complexes. After decades of practice, Maki highlights his persisting interest in creating a humanistic environment through shaping spatial experiences of the users. This interest is central to his design philosophy of modern architecture and contemporary cities, which is reflected in his notion of Collective Form.

Maki's lifelong interest lies in the confluence of place-making and building-making. On one hand, Maki was strongly interested in investigating the qualities of the built environment and the intertwined linkages between architecture, groups of buildings and the city at interrelated scales. On the other, he was enthusiastic about exploring new technologies, materials and morphologies to shape high-quality architecture that performs not only aesthetically but also socio-psychologically. In this way, his practice is both retrospective and forward-looking and allows considerations at building and urban scales to inform each other. Maki grounds his concerns in a fundamental curiosity about how architecture can shape sociocultural characteristics of the broader human society and expresses his visions through inventing buildings as a formal expression and spatial intervention. Maki believes that his urbanistic approach greatly contributes to more diverse, holistic considerations about the collective than a classic modernistic design.

## THE POST-WAR INNOVATIVE MODERNISTS

World War II destroyed many cities and triggered a series of rapid, far-reaching social impacts. A generation of innovative, young modernists emerged after the war, who sought to rebuild and modernize their cities after witnessing the destruction. Maki is one of the progressive architects who were greatly influenced by the Modern Movement and its post-war transformations. Maki was born in the Yamanote district of Tokyo in 1928. In the 1930s, the Bauhaus movement entered Japan and modernistic buildings represented excellence in design.[2] By the 1950s, architects who challenged the validity of modernism, especially modernist approaches to designing cities, have begun their explorations of new languages and innovative methods.

After WWII, there was an ongoing trend towards an urban focus in architectural discourses. The 1950s saw an increasing dissatisfaction towards compositional design approaches that emphasized rigid alignment of functional zones. Architects, especially the younger generation of modernists, problematized the simplicity of geometric rationality and shifted their attention to regional, contextual, and anthropological concerns. From then on, numerous urbanistic explorations emerged internationally to expand the design philosophies and methodologies for designing architecture and urban complexes.

1



2

3    Harry Francis Mallgrave, Modern Architectural
     Theory: A Historical Survey, 1673-1968;
     Cambridge University Press; 2005; chapter 14.

4    Klaus Herdeg, *The Decorated Diagram:
     Harvard Architecture and the Failure of the
     Bauhaus Legacy,* The MIT Press, 1985, 102;

5    Harry Francis Mallgrave, Modern Architectural
     Theory: A Historical Survey, 1673-1968;
     Cambridge University Press; 2005; chapter 14.

1    Ville radieuse (The Radiant City), 1930,
     Charles-Édouard Jeanneret (Le Corbusier)

2    The Monumental Axis in Brasília

## From CIAM to Team 10

Inspired by dramatic technological and social changes, the architecture field underwent ideological transformations during the early twentieth century. In 1928, a group of avant-garde architects founded the International Congresses of Modern Architecture (CIAM), led by Le Corbusier and Giedion until the 1940s. CIAM members were strongly influenced by Le Corbusier's designs and theories, seeking comprehensive, urbanistic approaches to human environment. They gradually directed town planning efforts to a rigid alignment of functional zones, separating dwelling, work, recreation, and circulation. This movement gained momentum after the fourth CIAM meeting on "the Functional City" in 1933 when Le Corbusier's Ville Radieuse (*Radiant City*, 1935 [1]) rose to be an international paradigm, documented in *The Athens Charter*.[3] After WWII, the *Athens Charter* gradually became an influential guideline for city design internationally. In American architecture schools, architects adopted CIAM's mechanical principles that emphasized functional zoning and two-dimensional layout in studio teaching, including Walter Gropius's and Marcel Breuer's studios at the GSD and Ludwig Hilberseimer's studios at Illinois Institute of Technology.[4] One manifestation of the Functional City is the Plan for Brasília designed by Lucio Costa and Oscar Niemeyer in 1956. [2] The plan exemplified a method of imposing order, progress and stability on Brazil's new capital, aiming to establish a city based upon equality and justice.

During the 1950s, dissatisfaction with CIAM's design principles increased. At the 1949 CIAM congress, Bruno Zevi criticized the dominant rationalist attitudes, led by Le Corbusier, Gropius, and Giedion, for excluding alternative views on modern design. At the same meeting, Sert initiated discussions about the heart of the city. Young CIAM members became increasingly concerned about "neighborhood," "cluster" and "association" and demanded a more organic, regional and contextual approach to imagining the city. At the 1953 CIAM congress, Alison and Peter Smithson advocated that a "hierarchy of human associations" (house, street, district, city) should replace principles of functional separation.[5] The Smithson couple and Aldo van Eyck officially formed Team 10 in 1954 and challenged CIAM's modernist approach at the 1956 congress. The rise of Team 10 ultimately led to the reorganization of CIAM in 1959. Team 10 members aimed at "a new beginning" departing from what they had inherited from modernism and began searching for new design approaches for the "society's realization-of-itself" through various explorations on urban theories and new formal languages, which were illustrated in *Team 10 Primer* (1962). They emphasized the importance of human scales, anthropological associations, and the social complexity of a community. Many members visited, and taught in, American schools, such as WUSTL,

6    Fumihiko Maki, Nurturing Dreams: Collected
     Essays On Architecture And The City, The MIT
     Press, 2008, 13.

7    Lin, Zhongjie (2010). Kenzō Tange and the
     Metabolist Movement. Routledge, 22.

University of Pennsylvania, Columbia University and Harvard, transforming architectural education. Maki became colleagues with Jacob Bakema (1959-61) and Aldo van Eyck (1961-62) at WUSTL, developed friendship with Team 10 members and participated in Team 10's meeting in 1960. Maki's view toward modern architecture largely paralleled the group's aspirations, suggesting influences from the post-CIAM humanistic turn.

## Tange and Metabolism

Maki's worldview always had a strong tie to his inherent Japanese background. During his formative years he maintained close contacts with Kenzō Tange and the Metabolists.

In Maki's impression, Tange was eager to experiment with new ideas. Tange's lab featured a distinctive international approach to design and presented dual characters—an atmosphere for both art creation and scientific research. The atmosphere at Tange's lab inspired Maki to favor a dynamic process of collective decision-making. Maki recalls:

> The issue is always how to proceed from a blank sheet of paper to realization – that is, how to direct and influence group behavior in a concentrated and unique way toward a certain objective. I hold as my ideal an organizational structure in which the group, while centered around one person and one theme, is in a state of flux, pushed this way and that way by internal contradictions and conflicts of imagination. Decisions are gradually made on the basis of objective reasoning, as is necessary for the creation of something as concrete as architecture.[6]

During the 1950s, Japan underwent rapid postwar construction. A group of young Japanese architects, centered on Junzō Sakakura and Kenzō Tange, began to explore new languages, concepts and approaches for building cities. The group, formed in 1958, named themselves *shinchintaisha,* namely, *metabolism*. In a biological sense, metabolism is the essential exchange of materials and energy between organisms and the exterior world. It also means to replace the old with the new. The group adopted the word to express their ambitions to actively, metabolically develop a city through continuous growth and renewal.[7] They sought to solve urban problems caused by Japan's explosive growth on scarce land through building "artificial ground" in the "absence of *tabula rasa.*" In 1960, the group initiated the World Design Conference (WoDeCo) in Tokyo, aiming to introduce their forward-looking, urban approaches to politicians, businessmen, journalists and academics both within and beyond Japan. As a mentor to the Metabolists, Tange emphasized

8    Rem Koolhaas, Hans Ulrich Obrist;
     editors, Kayoko Ota with James Westcott;
     Project Japan : metabolism talks; Köln:
     Taschen, 2011, 186-197.

9    Rem Koolhaas, Hans Ulrich Obrist;
     editors, Kayoko Ota with James Westcott;
     Project Japan : metabolism talks; Köln:
     Taschen, 2011, 295.

his interests in the future city at the WoDeCo and presented his Plan for
Tokyo, which featured utopian megastructures and influenced many me-
tabolists' approaches to urban design. He lectured about "*Technology and
Man,*" arguing that we would consider our cities "in the same way as life,
as organic beings composed of changeable elements, as the cell, continual-
ly renewing its metabolism and still retaining as a whole a stable form."[8]

In 1958, when Maki returned to Japan temporarily as a fellow of
the Graham Foundation, he met the Metabolists and assisted the Wo-
DeCo organizers. He proposed the Shinjuku Plan together with Ma-
sato Ōtaka, who presented their ideas of Group Form at the WoDeCo.
In the presentation titled "*Cooperation of Designers,*" Ōtaka stated:

> … The city is composed of countless persons, countless
> individuals; …wealth becomes more and more concentrated,
> developed, and transformed. With regard to this dynamic
> modern city I would like to propose a method of Group
> Form… dividing the city space into two sections: the
> machine-like sections and the human sections; and also of
> dividing it into two spaces: the space for speed and the space
> for people to walk.

After the WoDeCo, Maki distanced himself from other Metabolists, fa-
voring "organic urban growth and linkage" over "master planning"
and being concerned about the world rather than just Japan.[9]

## The Decline of the American City
## and the Rise of Urban Design

Maki's memoirs often speak about the influences from his involvement in
Team 10 and Metabolism, both of which inspired him to search for inno-
vative design principles in the 1950s. The Metabolists in Japan put faith in
technology and proposed gigantic utopian architectural structures. Team
10 members invited Maki to attend their Bagnols-sur-Ceze conference in
southern France in 1960. They expressed concerns about how to effectively
house large numbers of population, yet rejected Metabolists' ideas of mega-
structures due to considerations of humanity and regionalism. The exposure
to reflective, forward-looking debates at the encounter of the Metabolists
and Team 10 members greatly shaped Maki's design thinking at the intersec-
tions of technology and humanity, of architecture and the city, of reflections
on history and visions of the future, and of Eastern and Western ideologies.

Nevertheless, Maki has developed his own approaches to design amid
the then ongoing worldwide transformations of modern architecture.
His inspirations also included some precursors' ideas centered on form

3



4

10    Mumford, Eric Paul, Defining urban design:
      CIAM architects and the formation of
      a discipline, 1937-69; New Haven : Yale
      University Press, c2009,

11    Eliel Saarinen; The City: Its Growth, Its Decay,
      Its Future,1943;

3     Wendell O. Pruitt Homes and William Igoe
      Apartments aka Pruitt-Igoe Housing, 1954,
      St. Louis, Missouri

4     Pruitt–Igoe Housing

and derived from the changing conditions in postwar American cities. During the 1940s, American cities were fraught with urban illnesses such as industrial decline, auto-dependency, urban sprawl and racial-economic divisions. The white flight had left aging urban centers congested with nonwhite populations prevented from moving to suburbs.[10] Supported by President Truman, the Congress passed the 1949 Housing Act which made federal funds available for cities to clear large areas in city centers and build massive public housing. Redevelopments in the following years typically presented a CIAM approach or a Corbusian appearance, with multiple high-rise towers organized repetitively in rows, occupying giant super blocks merged from many existing city parcels. The Pruitt–Igoe Housing, designed by Minoru Yamasaki in 1950, best exemplified the modernist urban renewal projects. [ 3-4 ] The challenges of maintenance, crime and social conflict in the complex drew increasing criticism. Architectural design was blamed as a major cause. Despite the failures of such early urban renewal efforts, it was during the years of Pruitt–Igoe's rise that Sert had become the distinguished precursor who greatly promoted urban design at the GSD. Since the early 1950s, Sert led discussions and design studios on the future of the city centers as opposed to continued suburban sprawl. Shortly after completing his study at the GSD, Maki went to WUSTL in 1956 and co-taught architecture studios with Roger Montgomery, experimenting with designs for urban renewal. Sert's, Maki's and Montgomery's optimism towards revitalizing American cities led to the two earliest Urban Design degrees in American schools: Sert founded the Master of Urban Design degree at Harvard GSD in 1960; Maki and Montgomery established the Master of Architecture and Urban Design program at WUSTL School of Architecture in 1961. The initial focuses in these studios were to explore city design and test solutions for realistic urban renewal projects.

Maki's intense exposure to Western influence largely contributed to what distinguishes Maki from his Japanese architect peers. Under Sert's deanship at the GSD, Maki witnessed the ascent of urban design in the architectural academic world. He was influenced by discourses from precursors who rethought urban form and order in American cities. For example, in 1943, Eliel Saarinen proposed his vision of "organic order" and "organic decentralization" as the "surgical repair of deteriorated or blighted areas of failing cities." He emphasized that "the fundamental reason for success or failure in all town-building depends on whether or not town formation is based on the architectural principle of organic order."[11] Maki's notion of Group Form shares Saarinen's emphasis on organic order. György Kepes wrote in *Language of Vision* (1944) that the vision is a "device of orientation" and "a means to measure and organize spatial events" in both physical and human spheres and that the vision must evolve into a language of space that

12    Mumford, Eric Paul, Defining urban design:
      CIAM architects and the formation of
      a discipline, 1937-69; New Haven : Yale
      University Press, c2009, 101.

13    Mallgrave and Christina Contandriopoulos;
      Architectural theory, Volumn II: An Anthology
      from 1871 - 2005; Malden, MA : Blackwell Pub.,
      2006-2008; 291.

14    Fumihiko Maki, Nurturing Dreams: Collected
      Essays On Architecture And The City, The MIT
      Press, 2008, 26.

can enable humans' sensibility to perceive space-time relationships. Maki's premise for investigating Collective Form resonates with Kepes's advocacy for renewed visual representation of dynamic organizations in contemporary cities. Maki encountered Kepes at the first Harvard Urban Design Conference (HUDC), when Kepes presented his research on the "Perceptual Form of the City," conducted with Kevin Lynch at MIT and later published as Lynch's *The Image of the City*. The focus of the study was on human's perceptions of their relationships to the physical world. At the second HUDC, Kepes and Lynch together suggested that a good urban environment should be coherent, connected and growth-facilitating.[12] This idea is a critical reference for Maki's notion of Collective Form. In 1960, Louis I. Kahn lectured about "Order and Form" at the WoDeCo to the Metabolists including Maki. Kahn suggested that "design is form-making in order" which could emerge out of growth and support diversity and integration.[13] Kahn's philosophy connects physical form with social order and favors organic growth and social inclusivity. Maki's writings cite Kahn's work, echoing his beliefs.

Reviewing Maki's formative years, his academic experience, international travels and his interactions with his international peer architects have played fundamental roles in shaping his distinctive characteristics as an architect. Maki developed unique design thinking during a crucial, transitioning period in modern architecture. His writings on Collective Form capture major debates during the ideological shift in the mid-twentieth century. His theories exemplify the post-CIAM ideological breakthroughs in architectural thinking toward humanism and urbanism.

## INVESTIGATIONS IN COLLECTIVE FORM (1964)

Maki's book *Investigations in Collective Form* (1964) consolidates his philosophies of architecture and urban design as an emerging practitioner and educator. One of the most memorable periods in Maki's life was from 1958 to 1960, when he traveled on the Graham Fellowship and retraced philosopher Tetsurō Watsuji's footprints recorded in his book *Fudō* (1928). Traveling from Japan to Europe, Watsuji observed the monsoon region in Asia, the deserts in the Middle East and the meadowlands in Europe, comparing the three regions' civilizations.[14] Maki studied the formation of vernacular settlements in various climates and cultures in Southeast Asia, India, the Middle East and Europe. He also visited new modern cities, such as Chandigarh (Maki met Le Corbusier at Chandigarh). The forms and organizations of traditional settlements inspired Maki to propose the concept of Group Form. When Maki finished his trip in 1960, he returned to WUSTL and wrote an essay on three paradigms of Collective Form based on his travel notes, which was eventually developed into the book *Investigations in Collective Form*, published by WUSTL in 1964 and reissued in 2004.
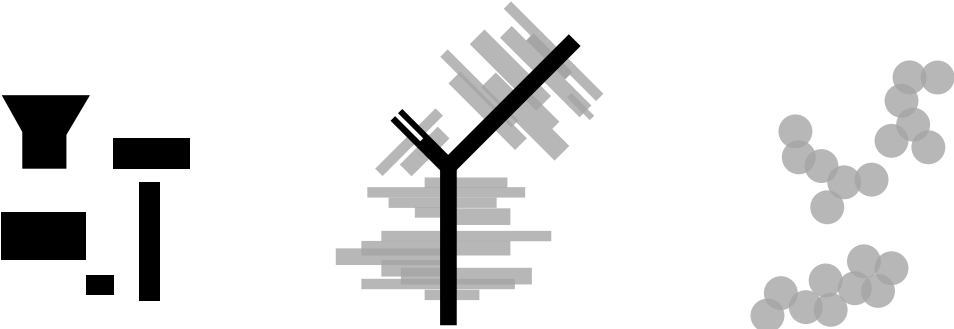
5

5    Compositional Form, Megaform and
     Group Form. Redrawn by author based on
     the original diagram in Fumihiko Maki's
     Investigations in Collective Form, 1964.

In the book, Maki reflects on diverse Eastern and Western ideas and paradigms of architecture and urban design, contemplates the desired qualities of contemporary cities and illustrates how to operationalize corresponding design principles. The book consists of two chapters: the first, written by Maki and Ōtaka, elaborates on the formal characteristics and spatial rationales in three typologies of Collective Form—Compositional Form, Megaform and Group Form [ 5 ]; the second, written by Maki and Jerry Goldberg, investigates linkages among components of Collective Form. Compositional Form refers to the predominant Corbusian design in early CIAM projects. Megaform includes Metabolists' schemes featuring "superstructures". Maki critiques the formal rigidity and spatial limitation of these two paradigms and advocates Group Form. He suggests that vernacular settlements have evolved incrementally and organically at a human scale, responding to local settings. Maki argues that these three models capture basic relationships between individual elements and the whole in an urban complex; they are not mutually exclusive and can coexist in one configuration. Maki's notion of Collective Form was well-received in the field, praised by renowned architects such as Walter Gropius, Kevin Lynch, Aldo van Eyck, and Jacob Bakema. Maki's philosophies underlying the advocacy of Group Form parallel the concerns about contexts, urbanism and humanism expressed by Team 10 and Lynch.

Maki posits at the beginning of his book that urban societies are "a dynamic field of interrelated forces" in "a state of dynamic equilibrium," whose character changes over time. This understanding of the dynamic nature of cities fundamentally differs from the modernist view which views urban dynamics as disorder and backwardness. Maki regards urban designers as the most concerned observers of a society and its physical, technological and social changes. Poised to tackle and influence urban dynamics, Maki points to the then inadequacy of spatial languages for creating coherent urban spaces amid socio-technological dynamism. He initiates the search for adaptable forms of the collective—especially a collection of buildings—as important segments of the city.

Maki emphasizes the distinction between form and design. Referring to Kahn's presentation at the WoDeCo on "Form and Design," Maki considers form as an outcome of the built environment that is observable and belongs to the viewer, whereas he views design as designers' inference about form based on site condition, budget limitation and client's ideas. Form is shaped by collective acts and belongs to the society, whereas design is an individual activity and is personal to designers. Form appears and changes according to the coordination of plural designs. Based on his understandings of form and design, Maki analyzes the design rationales underlying the three conceptual typologies of Collective Form.

6



7



8

6    Plan for Tokyo Bay, 1960, Kenzō Tange

7    Plan for Tokyo Bay

8    Japanese Metabolism: The Nakagin Capsule
     Tower, 1972, Tokyo, Japan, Kisho Kurokawa

## Three Types of Collective Form

Maki considers Compositional Form as the then most accepted outcome of modern design in the 1950s. The elements of Compositional Form are individual buildings conceived separately based on considerations of functionality, visuality and spatial relationships on a two-dimensional plane. Designers prioritize geometric, proportional rationality in their designs. Maki views the making of Compositional Form as a natural extension of conventional architecture. The masterplans of Brasília and Chandigarh, complying with principles in CIAM's *Athens Charter*, exemplify Compositional Form. In these newly planned capital cities, each building stands freely as a sculpture independent from other buildings and the field, presenting an iconic, monumental image. Maki acknowledges the merit of this approach, especially in particular historical contexts, yet suggests that designs following compositional principles tend to neglect the space between solitary, autonomous buildings and lack inter-building linkages and collective coherence. The compositional approach to design views urban development as a static, completable process and therefore fails in adapting to urban changes. Its prescriptive, formally deterministic rationality is inherently rigid and constrains future alterations and evolution.

Maki coined the term "Megaform" in this book, defining it as "a large frame" accommodating all urban functions, which would be realizable with technological innovation. A Megaform shares features of order and rationality with a Compositional Form, yet grows with increasing demand. Tange's Plan for Tokyo Bay **[ 6-7 ]**, his studio at MIT themed "A Community for 25,000," and the Metabolists' schemes **[ 8 ]** best exemplify Megaform. These proposals concern the relationship between the collective and individuals. They share the aspiration to generate metabolic cycles of urban development in organically growing infrastructures which would accommodate continuous growth. The Metabolists' ideal city consists of elements with various metabolic cycles. Elements with long lifecycles include large-scale infrastructures for transportation and defense, such as highways, rails, harbors, dams and enormous "artificial grounds" spanning over ground-level infrastructures. These long-term, massive infrastructures serve as spines and platforms for the growth of small-scale elements with short lifecycles, including residential, commercial, business and recreational clusters. The Metabolists believe that the combination of megastructures and numerous individual cells would allow for continuous growth and simultaneous renewal.

The concept of Megaform derived from the demand for massive expansion in modern cities and presents a Utopian nature. It continues being imagined and experimented with practice. Reyner Banham's book *Megastructure: Urban Futures of the Recent Past* (1976) presents hundreds of built

9



10

15   Zhongjie Lin, Kenzō Tange And The Metabolist
     Movement: Urban Utopias of Modern Japan,
     2010, 11.

16   Fumihiko Maki, Investigations in Collective
     Form, 1964,11.



11

9    Hydra, Greece

10   Hydra, Greece

11   Japanese Agrarian Village—Shirakawago
     Village with its main axis running North-
     South

and unbuilt projects featuring Megaform. Maki views Megaform as a promising approach to generating multi-functional urban complexes incorporating environmental engineering and modern infrastructures. However, he points out that although a megastructure enables changeable infills, it can become obsolete itself and lead to systematic failures. This innate deficiency in megastructures shares the rigidity and monumentality of Compositional Form.

Maki's distance from the other Metabolists is evident in the essay "Towards Group Form," co-authored with Ōtaka and published in the Metabolists' founding manifesto, *Metabolism: The Proposals for New Urbanism (1960)*. Questioning a static, rigid physical structure, Maki calls for "a more subtle internal order that underlies the natural evolution of cities."[15] He insisted that "a real urban order should accommodate certain degrees of disorder and encourage spontaneity, providing an alternative interpretation of 'city as process' to the megastructural approach." This ideal form is "a kind of master form which can move into ever new states of equilibrium and yet maintain visual consistency and a sense of containing order in the long run."[16] Against the invention of geometries and the static nature of compositional and mega form, Maki advocates for Group Form which is an organic pattern derived from environmental needs.

The concept of Group Form emerged during Maki's two-year travels. Starting in 1958, Maki headed west from Japan to Chandigarh, India; Isfahan, Iran; Damascus, Syria; Beirut, Lebanon; Cairo, Egypt; and Istanbul, Turkey. He then visited Greece and the rest of Europe. Maki observed numerous self-constructed houses scattered along the Mediterranean coast. He was impressed by the repetitive patterns and the intricate order in these vernacular communities. He perceived qualities of dynamism, coherence, flexibility, internal linkages, and open-endedness in these organically grown, self-governed communities. Maki began to use the term "Group Form" to describe the form of traditional settlements, exemplified by Hydra Town in Greece [ 9-10 ], European medieval cities, North African villages, Japanese villages [ 11 ], and sixteenth-century Dutch towns.

Maki perceived an organic whole in vernacular settlements such as Hydra.  The form of the town emerged with the aggregation and repetition of its typical housing units and the streets, paths and public spaces connecting housing clusters. The internal order evolved incrementally overtime and was well understood by its residents. Each resident was a builder who would intuitively fit into the community and carry on its traditions. The entire town was composed of generic, simple spatial elements, which collectively presented regional culture and identity. Maki found it fascinating that these communities survived for hundreds of years and maintained their order and overall image, being coherent both socially and physically. From housing units, to housing clusters and to the entire town,

17    Fumihiko Maki, "Exploration of Urban Design
      Language," Fumihiko Maki, Phaidon, 2009,17.

18    Fumihiko Maki, "The Future of Urban
      Environment," Progressive Architecture 45,
      Oct, 1964, 178.

the overall community was spatially rich and vibrant. To Maki, Hydra's unique and intricate relationships between parts and the whole were loose without a rigid hierarchy, which essentially brought an enduring quality to the town. Even when individual houses were destroyed or replaced by similar houses, the town's overall form would remain consistent.

Maki's emphasis on the autonomy and influence of each element (as opposed to a dominant overall structure) and his advocacy of a dynamic, coherent Group Form (as opposed to two-dimensional compositions of solitaries or a centralized, powerful relationship between parts and the whole) reflects that he values collective culture, democratic organization and incremental progress in an urban society. Group Form represents a society with collective orders and connections that allow for inherent dynamics. Maki favors a dynamic, reciprocal relationship—both in form and in operation—between individuals and the whole in a Group Form. Each individual units is a prototype, which determines the character of the ensemble at large. Once the link between the elements and the whole is established, each unit can evolve freely and autonomously while the characteristics of the whole remain consistent. Group Form grows cumulatively in a non-hierarchical process. Maki insists that "in an organic form such as a city, an urban order can only be maintained if the autonomy of individual buildings and districts is assured."[17] Group Form derives from concerns about local societies, cultures, and their development. It represents an urban environment with a flexible, democratic order, which accommodates long-term spatial and social dynamisms while ensuring individuals' autonomy.

To further distinguish Group Form from other rigid typologies, Maki highlights its temporal dynamics. He suggests that Group Form "can move into ever-new states of equilibrium and yet maintain visual consistency and a sense of continuing order in the long run," because its image "derives from a dynamic equilibrium of generative elements, not a composition of stylized and finished object."[18] The overall Group Form is an open-ended process with continuous evolution. This notion embraces Group Form's incomplete, unpredictable and transient characteristics, reflecting the urban conditions then. Group Form is essentially sustainable, allowing for flexible social structures that can adapt to unpredictable, rapid unban changes.

Maki's democratic notions regarding humanistic concerns likely have derived from his experience in American academia between 1953 and 1965. Living in Boston, St. Louis and New York, Maki witnessed the rise of community movements against modernist urban renewal projects. Maki also read the work from influential urban theorists and educators, including Jane Jacobs, Kevin Lynch, and Aldo van Eyck, whose ideas resonated in criticizing the modernist approach towards city planning from a humanistic, populist perspective. Maki's emphasis on the overall, sustainable image

12

19    Vincent Ligtelijn and Francis Strauven; Aldo
      van Eyck: writings; The child, the City and
      the Artist: An essay on architecture, The in-
      between realm; written in 1962; Amsterdam,
      Netherlands: SUN, 2008, 218.

20    Fumihiko Maki, Fumihiko Maki, Phaidon,
      2009, 6.

12    Fumihiko Maki,
      Hillside Terrace Housing in 2010

of Group Form parallels Kepes and Lynch's study at MIT on perceptual form of the city (1954-1959), published as *The Image of the City* (1960).

Both Maki and Team 10 members proposed ideal urban form following their humanist and social aspirations. Group Form also parallels the structuralist approach of adding dynamic individual elements to create a cluster, in which individual elements can change without altering the overall urban image. Aldo van Eyck (a Dutch Structuralist) identifies architectural reciprocity in part-whole, small-large and house-city relationships and sought to create corresponding diversity-unity and individual-collective reciprocity in human societies.[19] To reconcile the dual phenomena, he emphasizes the transitional, in-between places, resonating with Maki's emphasis on inter-element linkage in Group Form. They advocate that architects should create organic linkages between individual elements and the whole and between old and new elements. Accordingly, the designs of new architectural projects must respect existing urban contexts and fit into the rest of the city. Such propositions suggest a humble, yet socially responsible, role of architects in a society. Contrasting modernist design, which generates self-interested icons with a dominating image overwriting existing orders in the city, approaches exemplified by Maki and Team 10 are democratic and pluralistic. Architects become mediators among individuals, among individuals, collectives and the society, and among the past, the present and the future.

Maki has greatly enriched his notion of Collective Form through intensive practice. His basic approach to design remains "starting with individual elements to arrive at a whole."[20] Maki emphasizes after years of practice that space is an important medium and that the coherence of Collective Form depends on the cumulative effect of the designs of both exterior spaces and architectural forms. The underlying aspirations in his investigations in Collective Form have been central to the designs of his representative projects, including Hillside Terrace [ 12 ], Tokyo Metropolitan Gymnasium, Keio University Shōnan-Fujisawa campus, and Republic Polytechnic campus in Singapore.

## THE CONFLUENCE OF COLLECTIVE FORM AND COMBINATORY URBANISM

Maki has been a keen learner of local cultures across the globe and an active participant in forward-looking dialogues about people and the society. Maki's cross-cultural understanding of the urban is rooted in his inherited background and international influence. His contextualized explorations of adaptive, sustainable and democratic environment and social systems are highly relevant to today's urban practice and education. His spatial-social concerns and ethical stance on design principles have enduring impact on architectural and urban thinking in an era challenged by

globalization and increasingly volatile social-political dynamisms. Since the mid-twentieth century, fields related to architecture and urban planning have greatly diversified and become increasingly interdisciplinary. Architectural and urban practitioners face more complex urban problems intertwined on physical, social and environmental dimensions. Agencies shaping the built environment often hold diverse, conflicting interests. Capitalist ideologies largely drive state and market forces. Attempts to innovate traditional approaches to city making ought to continue.

Thom Mayne, another reflective architect and pioneering thinker, has expressed similar aspirations as Maki and published *Combinatory Urbanism: A Realignment of Complex Behavior and Collective Form (2011)* as a manifesto of his design philosophies. Mayne argues that the idea of using urban planning as a means to control urban growth based on the prediction of future development has become obsolete. He also refutes the idea that architecture is about inserting single objects into a comprehensively planned urban matrix. The conventional prescriptive approach to urban design and development is increasingly ineffective in meeting human and societal needs, since urban future cannot be accurately predicted, especially in increasingly mobile and rapidly changing societies. Mayne insists that architects and planners need to create new design concepts and methods that address the complex interplay of human and natural forces that shape cities and influence the future. Accordingly, architecture must responds to urban forces active in its contexts which transcend property boundaries; urban planning must create flexible, adaptive spatial structures that can accommodate rapid, unpredictable social-spatial changes. Architecture and planning practices must overlap and converge both in scale and in their spatial-social concerns.

Like Maki, Mayne experienced socio-cultural changes during his formative years which shaped his view toward architecture and the city. Mayne studied in architecture schools during the 1960s, which was a turmoil, transitional period in America. Mayne recalls experiencing the early phase of the exhaustion of modern projects and an antagonist attitude toward the past when schools paid little attention to urban history education. It was also a fraught time in American history amid the Civil Rights movement and Vietnam War. Against the backdrop of dramatic cultural-political changes, Mayne witnessed the discourse about architecture toward considerations of urban and natural forces. During Mayne's early practices in the 1970s, he realized that the ongoing social changes driven by various powers within broader business and political communities were out of sync with architects' aspirations. It was also a time of worldwide neoliberal turn in economic policies. American ideologies were divided by two prevalent understandings of the government's role: one notion favored unfettered freedom in a *laisser-faire* environment and rejected collective act, whereas

the other highly, almost religiously, appreciated the importance of the communal. Such dilemma in reality made architects' dialogues about the ideal form of architecture and the city seem lofty and Utopian. By the 1980s, the world had moved toward a more singular capitalist model. Urban design as a profession and dialogues about design ethics were disappearing.

To Mayne, there has been an unresolvable cultural divide in America rooted in conflicting values, which makes it difficult to negotiate and find the middle ground. Mayne believes that collective goals still are important for the overall wellbeing of a society and that equitable distribution of resources is crucial to a healthy economy. Capital should not be owned only by a small group of people. Therefore, the discourses about what development objectives matter to the society as a whole should shape architectural thinking. Architecture becomes the reflection of the world, consolidating conflicting values and social relations in its physical configuration. Those who shape the built environment—be it architects, urban designers or planners—must become thought leaders who bear the responsibility to respond to current socio-cultural conditions and to stimulate progressive cultural transformations.

Both Maki and Mayne traveled around the world, observed different places through an anthropological lens and absorbed ideas from various cultures. They share a sense of social responsibility. Both are interested in the fluidity, adaptability and complexity of architecture and the city. There are three parallel ideas at the confluence of their ideologies. First, they both view architecture and the city as open-ended, dynamic fields of interrelated forces. These interrelated forces shape Group Form in Maki's view and are "combinatory" in Mayne's term. In their views, architecture and urban complexes play infrastructural roles in constantly changing societies. They refuse to view architecture as isolated, static objects; rather, they emphasize the organizational and infrastructural roles of architecture in networked conditions and highlight the societal importance of tangible and intangible interconnections among urban elements. Mayne expands on this notion and views the built environment as information landscapes, which include elements with autonomous characteristics. Building interconnections and forming networks within the information landscapes become the method for coherently organizing plural elements and mediating between complicated problems.

Second, both Maki and Mayne consider the transformation and impact of urban complexes over time. A sense of space influences human experiences and memories; therefore, architecture and the city have lasting socio-cultural impacts. Maki and Mayne aim to create adaptive urban complexes that can accommodate future changes. To do so, they favor flexible configurations that respond to both site conditions and larger contexts. Mayne argues that architectural and urban design depends on iterative processes of feedback and adaptation. Both architects have been highly reflective in their practices

during which they continuously critique and challenge their own thinking and proposals with urbanistic, landscape, tectonic, functional considerations. They regard design practice as a reflective, cumulative process that builds on critical assessment of, and adaptive adjustment to, plural problems simultaneously.

Third, both Maki and Mayne embrace ambiguity in urban complexes, where multiple layers of constituent elements and inter-element linkages co-exist. They are interested in linkages, in-between spaces and interval behaviors. Mayne particularly rejects binary worldviews and advocates for the negotiation among plural, more nuanced understandings of issues at hand. Mayne holds architects accountable in making decisions that result from the negotiation of conflicting values in the complexities and dynamisms of contemporary societies.

Overall, both Maki and Mayne advocate for the creation of urban systems that both solve current, contextualized problems and facilitate enduring socio-cultural progresses in a broader society. They imbue socio-political aspirations in their practices and seek to intervene in intricate, interrelated urban spaces and political systems, aiming to generate enduring impact through the creation of adaptive urban complexes. They also both advocate for expanding and reshaping architecture and planning education to prepare practitioners for tackling broader societal challenges that matter for collective, sustainable wellbeing.

## Conclusion

Fifty years after Maki proposed the notion of Collective Form, Mayne finds it thought provocative and useful for today's discourse about architecture and cities. Dialogues about the "collective" in architecture, urban design and planning stimulate new conversations and arguments about ongoing societal struggles in contemporary cities. The notion of Combinatory Urbanism not only echoes Maki's propositions of Collective Form, it also continues the socio-cultural debates about ethical principles for architectural practices originated during a transitional period in the fields of architecture and urbanism. This stream of discourse links many seminal ideas, including those from CIAM, Team 10, Tange, Sert and Lynch. It traces the historical evolution of architectural and urbanistic ideologies and connects Eastern and Western innovative thoughts. The fields of architecture and urbanism have always projected the ideal city. At the confluence of all the progressive attempts lies debates about design ethics for practitioners who shape urban systems. Maki's and Mayne's notions about architecture and the city are open-ended, ambiguous at the conceptual level, allowing for interpretation and improvement. They inspire productive, normative debates aiming at societal significance and hence produce enduring

impact on fields concerning the human environment and urban societies.

With technological innovation and massive adoption of digital tools, human connections increasingly become more abstract and intangible. Discourse about Collective Form brings back the disappearing discussion about the urban realm in a world with fragmented interests and even more rapid changes. Would collective aspirations disappear? What should be collective form for today's cities? How to build infrastructures and public realm that support collective goals of cultural and societal progresses? These questions remain relevant to the current society and worth continued discussion. Solving urban problems requires collective wisdoms synthesizing considerations on plural dimensions, including economic, tectonic, urbanistic and environmental factors. These dimensions are structural to a society. Tremendous efforts must be invested in balancing all these dimensions to generate a better collective outcome.

Urban study is located within the reality of its context. Historical evolution of ideologies in response to urban changes provides lessons for addressing contemporary issues and preparing for future changes. Today's flows of capital, knowledge and information are increasingly connected at a global scale. Yet, new forms of social and cultural divide increase with capitalist urban production. The urban realm is not limited to man-made cities, but applies to a multi-faceted realm interweaving natural, artificial and virtual elements. This opens the possibility of architecture to contribute profoundly toward the formation of more diverse and fertile urban environments. Mayne suggests that the current business and political environment fails to facilitate structural change in contemporary cities. Therefore, architects, urban designers and planners ought to be the imagineers who reshape the societal infrastructures to enable socio-political changes. They ought to be optimistic and take the initiative.

## Acknowledgements