# Dynamic-hybrids and their role in the post-Fordist city

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The shifts from a production-based economy to that of a knowledge-based economy have had far ranging effects on not only the way business is conducted but also on the occupation of space. Specifics of location have tended to become less important in a global economy based on flows of currency and distributed services. Instead importance is placed on mobilization of communication and resources, allowing for connection from anywhere in the world. Many correlations can be made between the contemporary city and the contemporary corporate office when both are seen as complex organizations that are simultaneously shaped by internal and external forces. The concept of a "business ecosystem"[1] is one in which economic communities are composed of interacting organisms (corporations, companies, individuals) playing the roles of suppliers, producers, competitors, and consumers. All the inter-related organisms make up a larger system in which the entire ecosystem can be seen to co-evolve and collectively plot trajectories that are mutually beneficial. The city can then be read concurrently as an economic ecosystem and as the location for such an ecosystem to thrive.

Decentralization and self-organizing systems have become the battle cry from many different disciplines in recent years, from economics and politics to biology and computer science. Two unrelated events that directly addressed decentralization, both occurring within a day of one another in 1991, are the fall of the Soviet Union and the restructuring of IBM. The former transformation provided a decentralized economic and political framework, the latter provided more flexible through the use of semiautonomous business units and respond more quickly to changing markets.[2] This push toward decentralization has also exerted its influence on the corporate workplace, mainly through the benefits provided by information technology. The typical composition of Fordist business was a clear hierarchy created between the elite managers and the task specific work force. The positions at the top of the pyramid were stable because they had the knowledge and had no reason to share it. Conversely, in the post-Fordist climate, the impact of information technology tends to flatten hierarchies, where it is possible to share vast amounts of data (knowledge) across globally distributed computer networks. Distributed knowledge and skills allow groups within larger organizations to concentrate on processes and projects as opposed to the mindless tasks of the production line.[3] This distributed/decentralized business is then able to quickly reorganize itself to address rapidly changing customer needs. This strategy is a profound difference from the time when the model-T Ford was offered in one color. In that instance, the business defined the market. In the post-Fordist climate, the corporation caters to the desires of the consumer. Not only has the distribution of computing power changed organizational structures because of size and cost reductions, it has also impacted the way the worker interacts with the office. Desktop, laptop, and palm top computers have replaced the ubiquitous office cubicle. Workers are no longer tied to any one desk, some even interact with the office from their homes via the network.[4]

This constantly changing environment becomes an incredibly exciting condition within which to propose architecture. The built physicality is seen in direct contrast to the fast paced, technologically innovative business environment that consistently values its ability to re-structure itself. Rather than be paralyzed by the fluidity of corporate organization, it is necessary to embrace this complexity and use it as a generative factor in the design process. The proposed architecture must respond to the influences and pressures that are constantly shaping the corporate workplace– presently the dominant factors are management structures and innovations in information technology. In the past, the centralized (Fordist) structure of the workplace had direct effects on the city's form. Cities such as New York, Chicago, and Houston contain mirror clad, vertical monuments to corporate hierarchies. The corporations are bundled together, formally expressing the hierarchy of workers, giving rise to the notion of "climbing the corporate ladder". In contrast, the decentralization of office work renders the ladder, socially and formally obsolete. One corporation can be geographically distributed throughout a city or in more extreme examples across the world. The city can now be comprised of networks of enterprise woven together, creating connections of suppliers, producers, competitors, and consumers. Just as the corporation is able to adjust itself to changing market conditions, it could also respond to changing urban conditions. The post-Fordist city can then be read as a topographical expanse of the business ecosystem.[5]

Because of the increased complexity of the systems of the city and the systems of the work place, an emphasis is placed on the integration of research into the design process. Designers need to make informed decisions that are not based in the domain of the formal. Because the body of knowledge about office organization and information infrastructures is growing so quickly, the designer can no longer rely on personal experience. One example of this relationship of research and practice is found in the London based design firm of DEGW. Numerous publications have been produced by DEGW (lead by Francis Duffy) such as *The Changing Workplace*. The books disseminate the lessons and solutions that the firm has developed through its

practice, and it is precisely this component of research that has given the firm its edge in workplace design.

Using this workplace research to investigate the conditions of the post-Fordist culture lead to the genesis of the "dynamic-hybrid". The dynamic-hybrid is an idealized building type that could simultaneously address the internal (corporate) and external (urban) forces created by constantly changing economic and organizational conditions. The dynamic-hybrid design process exploits multiple strategies in an attempt to mediate the ordering systems of the city and the generative systems of the corporate office. More than multiple uses grouped under one roof, dynamic-hybrids are able to resolve autonomous use and identity conflicts by emphasizing the interconnectedness of complementary activities. The building is both multiple and single, both coherent and incomplete providing the ability for hyper-use (24 hour site activity) and increased density to occur on a single site within or across the city.

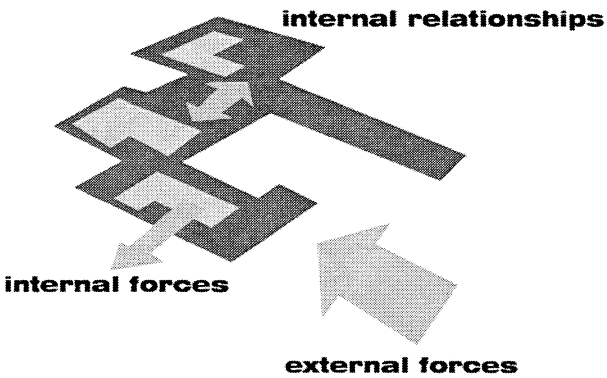



*Fig.1. Diagram of forces impacting the dynamic-hybrid.*

One such strategy that was adopted to cope with this increasing dynamic complexity was to approach the problem with both a top-down and bottom-up approach. The top-down scenario is the way that most design projects are begun, a conceptual framework is applied or superimposed onto a condition, which can be analogous to a centralized mind-set. This methodology is commonly used to order chaotic conditions and typically stresses geometric tendencies. In the case of the dynamic-hybrid, the top-down approach is employed to understand the site conditions - the externally applied forces. In contrast, a bottom-up approach is used to bring order to the internally exerted forces that influence the relationships of the internal programmatic elements. The bottom-up approach is the phenomenon that results in schooling fish and flocking birds. Sets of small order rules govern the relationships of the individual agents, allowing the overall form of the organization to be more flexible. In such systems the organization is able to quickly adapt to changes in the environment. Small flocks and large flocks exhibit the same behavior and common patterns emerge because the local rules are the same.[6] When workplace organization employs the bottom-up strategy it is able to track market needs and thus reorder itself accordingly. By understanding the implications of the top-down and bottom-up design strategies and using both, a designer is able to neutralize any tendencies to overcompensate for either the internal or external conditions – allowing both to influence the resultant form.

## The Design Studio

As a means of initially investigating the idea of the dynamic-hybrid, it was used as the basis for an upper-level, undergraduate design studio. In this scenario, a broad range of possibilities could be explored over the course of one semester. In addition to using the studio as a method for investigating the topic, it was also decided to explore the design studio structure. As has already been mentioned, the dependency on research when dealing with the topic of the new office and new technologies would offer this opportunity to investigate the studio structure by exploring the impact of integrating research into a design setting. A research component would not only aid in grounding and directing the content but it would enable the students with a methodology for solving problems. The condition of a directed investigation was created by not only defining a building program, but by also specifying the way in which the students would work. This provided the students with a conceptual framework to work within (or to work against) allowing them to concentrate on solving a problem instead of grappling with how to approach a problem. The impact of research was multiple - it provided input but also generated results that were used by the studio members. The research was seen in addition to activities such as the traditional site analysis that could arguably be considered design research. Instead, students would select a topic to investigate, analyze, reformulate, transform, and present the topic to the group. The production and presentation of the research results created a collaborative environment where students could apply the shared knowledge of one another during the design phases. Students became specialists within different topics over the course of the studio. In many ways a hybrid studio was created with a horizontal hierarchy, where specificity and diversity was promoted among the members.

The research components were integrated with the studio through the scheduling of research assignments that preceded design or analysis exercises. Students researched design concepts, new materials, technologies, urban and environmental conditions, precedents, and representational techniques all viewed as tools to be applied by designers. The research empowered the students with tools to solve the complex problems. This approach required the students to engage in a form of architectural research through which they prepared and applied the rationale for their design proposals – allowing the students to work with or against the material they had critically explored. The design activities of the studio were opportunities to synthesize, apply, and test the research. The educational goal of the

studio was to provide the students with a structured and critical process to approach future architectural problems. The studio was broken into four major sections that related to the idea of the design process for a dynamic-hybrid: concept, site, program, and synthesis. The synthesis was the time to create architecture from the strategies and diagrams that emerged from the research components.

*Concept*

The conceptual system works in many ways as the method of operation to form relationships between the other two systems of site and program. The concept becomes the way one evaluates progress during the design process. In the case of the dynamic-hybrid, a range of possibilities from multiplicity to singularity were the focus of the conceptual system, allowing the building to be simultaneously read as one large building or many smaller buildings. The designer is constantly challenged to understand the identity of a comprehensive organization versus the fragmentary nature of a distributed organization and the relationship to the city.

The studio methodology was directed but the architectural possibilities were limitless permitting students to explore any formal solution to the complex problem that had been presented to them. The "new office" as proposed by Francis Duffy, provided a springboard to investigate not only transformation but also dynamic architecture. What role would a non-hierarchical office organization play within the context of the overall proposal and would it be able to work in an urban center? Could a design allow for unexpected change but still contain specificity?

*Site*

The site system primarily addresses the external forces that act upon the building at an urban scale. These forces, which may include economics, politics, infrastructure and transportation create the character of the place. There are a number of factors that are critical in the design of the dynamic-hybrid: climate, orientation, boundary conditions, access, and public space. The top-down design approach is useful to bring an order to the relationship of the building and site but need not occur in a mimetically formal way. The site design is approached as a masterplan that permits change to occur as the design investigates the program of the interior environment. The main concern when addressing the site is the relationship of global conditions to local conditions. Because the building must accommodate complex boundary conditions, the designer must be aware of specific conditions (local conditions) while maintaining an understanding of the overall coherence of the building, which stresses the global condition. The goal of the dynamic-hybrid site strategy is to create instances of readings as fabric buildings and as object buildings.

The site for the design studio was located in downtown Boston on four parcels of land that had been created by the depression of the central artery. The site contained dynamic qualities in that it was currently under construction and the future of the site was unknown. Students were forced to make predictions about site use, the evolution of the city, and the role of their proposal in that vision. The site history was also dynamic, originally as part of the harbor, later filled to form the waterfront, insertion of the freeway, and most recently the depression of the freeway. The site was located between many different districts within Boston, which intensified the condition of identity, local and global conditions. Each face of the building would face a different neighborhood: the North End, the Financial District, the Waterfront, and Faneuil Hall. Each district had different use patterns and groups of people that would traverse the site of the dynamic-hybrid.

*Fig.2. Composite site image (courtesy Eric Daffron).*

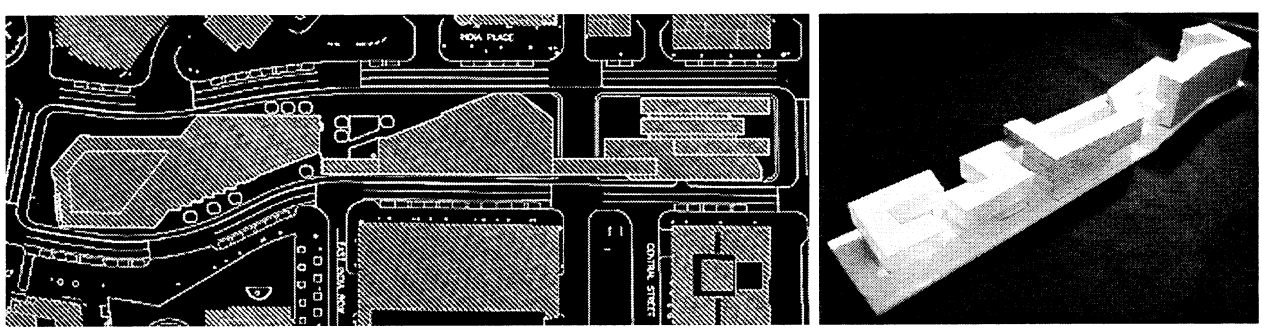



*Fig.3. Fabric strategy for the site (l. Dawn Barnum, r. Eric Daffron).*

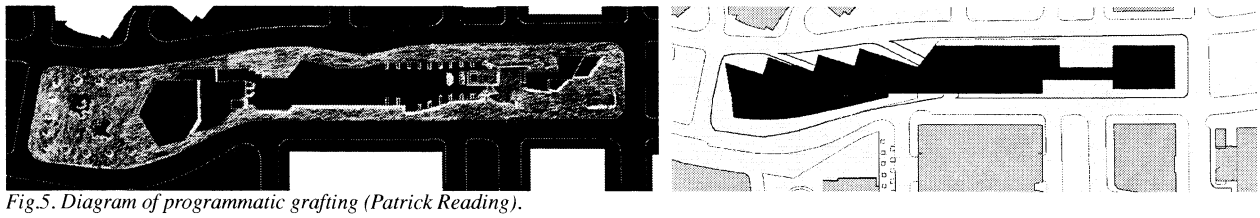


*Fig.5. Diagram of programmatic grafting (Patrick Reading).*

Two extreme strategies for dealing with the complexities of the site emerged. The first was to allow circulation across the short direction of the site, re-knitting the fabric of the downtown. This strategy focused on the use of a smaller grain fabric structure. The second strategy that appeared to be more object-like favored circulation along the long direction of the site. This strategy created a continuity of movement along a future park condition that would occur in place of the artery.

*Program*

The programmatic system concerns itself with the internal forces of the building and is approached with a bottom-up understanding. By allowing the internal elements to migrate, flock and school within a larger spatial volume the programmatic elements are able to build in connections and create networked relationships. The design process attempts to create a condition of self-organization of the interior environment. The goal was to create a high degree of communication among the program to address the workplace processes. This desire is based in the belief that a post-Fordist decentralized organization can become highly effective through the promotion of connectivity and redundancy, similar to the high degree of connectivity in the brain.[7] The bottom-up approach allows for a fluidity to occur that addresses the concern of conditions from dynamic to static. Designers are able to exploit conditions of use patterns that follow timetables that may occur hourly, daily, weekly, seasonally, or yearly. By exploiting various temporal conditions and information technologies, the design can create an extremely efficient use of lease-able office space.

The program for the design problem was another point where the student would need to address the issues in a critical fashion. The students were not given a list of square footage but instead a scenario. A major banking institution in Boston wanted to develop a prominent site newly created through the depression of the central artery. Because of the dynamic and constantly changing nature of the bank (growth with acquisition of smaller institutions, and reductions in spatial requirements of increased IT infrastructure), the design would need to be flexibly inhabited. If the bank grew it could take over more of the building, or it could lease space not used. The nature of banking could also be explored, extending the distributed nature to include ATM's and Internet banking. The design would be the bank's face to the city, housing a public relations annex, meeting spaces, conference spaces, convention spaces and open office zones. The building and overall site development would be extremely public in nature. The designers would need to propose additional program elements based on their understanding of the character of the site and definition of dynamic-hybrids, which in the end would total about 500,000 sq.ft. The students were not only dealing with the addition of program but the incorporation of that program, creating relationships with the fluid office space and public space. It was not an option to propose segregated programs. The programs would need to interact formally, socially and economically.

Two programmatic strategies emerged within the studio (also providing for permutations and composites), one of programmatic grafting and another of hyper-activity or design with a 24-hour cycle. The first strategy was a direct result of site analysis and of programmatic site analysis. Students were encouraged to investigate the site through a dynamic-hybrid lens. Using this approach, students identified activities both at the boundaries and on the site. Then the students would locate their programs on the site either in response to the findings or in contrast to the findings. A possible outcome would be to locate tourist functions near the tourist traffic patterns, or conversely locate tourist functions away from the main path to facilitate movement across the site, increasing interaction of different parties.

The second strategy was based on the temporal relationships of program. This approach working from the inside of the building to the outside. The main goal of this agenda appeared to be the creation of a hyperactive condition on the site, creating a condition of constant activity. The bank would be open during business hours, so a bar could open at night. This approach allowed for overlap of programs where "swing spaces" could be identified and articulated, permitting both activities to occur at different times but using the same space. Temporal diagrams were deployed to explain the conditions over the course of a day or week or year.

*Synthesis and Architecture*

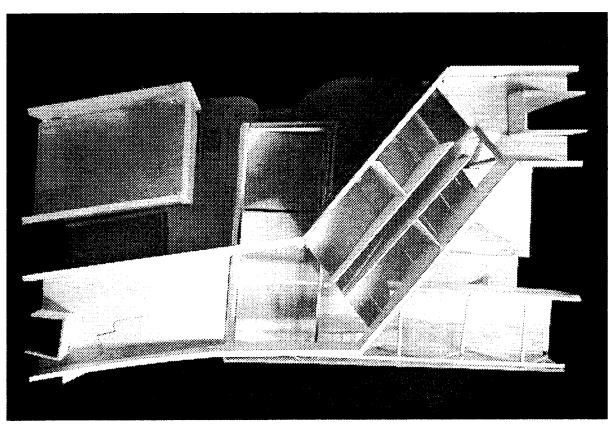
The dynamic-hybrid is seen to evolve from the three discrete systems, which are synthesized throughout the design process by initially isolating them as variables in an equation. An attempt is made to solve for each and then attempt to recombine them. However, this process of synthesis is not so reductive because it is iterative and cumulative in nature: one phase must be carried out first thus allowing the lessons to be carried into the second phase. The design process can learn much from a scientific model that makes explicit hypotheses, then sets out to prove or disprove. Designers must find a mediating stance that is inclusive of both analytical and generative methodologies. To aid in clarification of the design process it became necessary to articulate an operational matrix with which one could map the productive strategies. The axes of this matrix were composed of three categories: dynamic to static, multiple to singular, and global to local. The goal was to occupy as much of this matrix as possible, essentially blurring the conditions, never articulating the extreme poles unless to benefit from intentionally / intelligently doing so.

Two issues seemed to constantly emerge throughout the design process: scale and enclosure. The issue of scale was used to understand the problem. Students were constantly challenged to work at various scales, a methodology that would begin to address local and global conditions. As the interior was articulated, the exterior would need to be re-examined to understand the impact on the public exterior spaces. As the site issues were addressed, ideas were proposed to understand material relationships between the interior and exterior of the building. The con-

ditions of part to the whole were assessed through a shifting of working scales from architectural to urban to site to detail and back.


*Fig.6. Plan view of detail model illustrating part to whole investigation (Eric Daffron).*

The building envelope also began to become a fascination of the students because it was seen as mediator between the complexities of the exterior and the complexities of the interior. A common strategy was to understand the enclosure as having an identity of its own, resolving the discrepancies between site and program, often becoming a thick zone. This enclosure approach created a condition of programmatic looseness within the building and of building on the site. The looseness permitted unexpected opportunities to occur in these interstitial zones between the inside and outside.



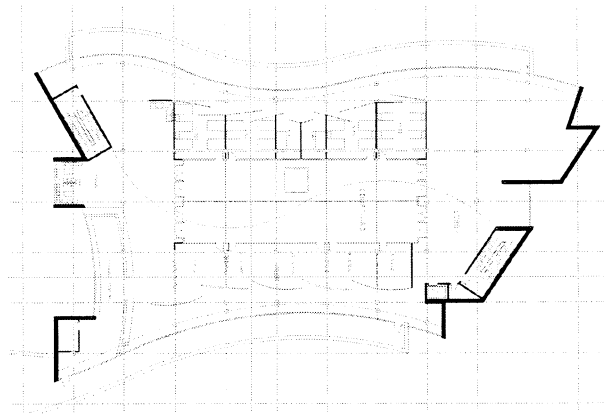


*Fig.7. Plan detail illustrating autonomous quality of façade and program (Heather Lang).*

*Results*

Even though the structure proposed for the studio created a focused framework, the work that the students produced covered a broad spectrum. As instructors, we presented a clear agenda of ideas without restricting the architectural possibilities. In many ways the resultant architectural proposals were of less importance than the techniques and strategies that were devised to deal with the complexity of the multiple problems, issues, and agendas. The student feedback favored the introduction of a problem solving methodology overlaid upon the design portion of the studio. The research aspects were useful not only for the input that was provided but was useful to develop a language with which to discuss the content of the studio. The entire group developing and learning as the semester progressed, stressing the horizontal hierarchy within the group – less about instructors lecturing and more about a team working together.

The dynamic-hybrid was also able to evolve over the course of the semester. It became less a building type and more a design process or strategy. To be consistent with the research goals of the studio (to build upon a knowledge base), a second studio was offered on the same site but of much smaller program, which built on the ideas of the first studio. In the second incarnation the students used the research work of the previous studio but focused on the tectonic and dynamic qualities at an architectural scale.

The conditions existing in the post-Fordist city became both the physical and conceptual site for the idea of the dynamic-hybrid. The decentralized and self-organizing approaches that are grounded in the economic and managerial world became the conceptual foundation for a design methodology. The design methodology was explored and articulated through the design of a dynamic-hybrid, but could be just as valid for the design of anything with complexities of internal and external forces. The design studio presented did not only integrate a research

component within its structure but was itself a form of research. One of the most important aspects of research is that it sets out to add to a knowledge base, and must be disseminated and shared. The products of the studio have been used as the foundation for additional studios, building on the teaching experience of the dynamic-hybrid studio. The results from the studio provided a deeper understanding of what a dynamic-hybrid could be and offered an insight into what role such a building type could have in restructuring an urban center, using the post-Fordist scenario as a generative influence. The design setting, created through the synthesis of a theoretical building type, a design methodology, and incorporation of research allowed the architecture to evolve within the complexity of the ecosystem of the post-Fordist city.

NOTES

1 James F. Moore, *The Death of Competition* (New York: Harper Collins Publishers, 1996).

2 Mitchel Resnick, *Turtles Termites and Traffic Jams* (Cambridge, MA: MIT Press, 1994).

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5 Alejandro Zaera Polo, "Order Out of Chaos – The material Organisation of Advanced Capitalism," *The Periphery* - Architectural Design, Academy Editions (1994).

6 Stan Allen, "From Object to Field", published in *Architecture After Geometry* - Architectural Design, Academy Editions (1997).

7 Gareth Morgan, *Images of Organization* (Beverly Hills: Sage Publications, 1986).