

TEACHING HOUSING, TEACHING IDEAS

The Ideas Circus¹ (Re)Searching: Architecture + Speculation

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I am a visiting assistant professor and research fellow at a university and currently teaching a research seminar on new domestic environments. Titled, *The Ideas Circus¹ (Re)Searching: Architecture + Speculation*, the seminar attempts to speculate on the future by observing the intelligence embedded in new technology, production processes and specific cultural constructs such as consumer preferences and adaptable organizations that are rapidly becoming the dominant vehicles of 21st century lifestyle and speculate how this intelligence might be appropriated and improvised to re-configure the logic and politics of a series of domestic environments. The seminar is adopting a series of specific pedagogical approaches to facilitate this goal and address the relationship between housing, technology, production and culture in the 21st century, via a simple weave of the following processes; Interdisciplinary Research, Speculation, Prototyping and Case Studies.

1 RESEARCH

- To investigate thoroughly
- Careful or diligent search
- Collecting of information about a subject

1.1 Collaboration with Industry

One cannot but notice the recent application of technical research as the perspective through which a great number of seminar and studios in the finer institutions are now being conducted, likewise my seminar abandons the traditional role of a class curriculum and investigates the role of research as a pedagogical instrument that establishes the core thought process of the seminar. It is not before time that the architectural academy, employ the pedagogical routine that has long since prevailed and excelled in other university departments, most notably in the sciences, medicine and engineering faculties, where research is often secured by the interests of the private industrial sector who keep one eye on innovation and the

other firmly fixed on the viable commercial results.² That the architectural academy failed to similarly hook resources from the construction industry and other private industrial sources in the past may account for its limited foray into technical research of a sophisticated quality.³ However, looking around at some institutions it now seems that we are entering into a new period of exchange between the industry and the academy, a dialogue fueled by architecture's necessity to keep abreast with contemporary technological expertise and innovation. For once, the academy is lagging behind and is quite aware that its sudden appetite for technological sustenance provides the only way of catching up.⁴

1.2 Information Arbitrage: In pursuit of the interdisciplinary

"Unfortunately, in both journalism and academe, there is a deeply ingrained tendency to think in terms of highly segmented, narrow areas of expertise, which ignores the fact that the real world is not divided up into such neat little beats and the boundaries between domestic, international, political and technological affairs are all collapsing.....Unfortunately, in a great many places in our society, including academia and most bureaucracies, prestige accrues principally to those who study carefully some (narrow) aspect of a problem, a trade, a technology, or a culture, while discussion of the big picture is relegated to cocktail part conversation. That is crazy. We have to learn not only to have specialists but also people whose specialty is to spot the strong interactions and the entanglements of the different dimensions, and take a crude look at the whole. What we once considered the cocktail party stuff- that's a crucial part of the real story. So on to my cocktail party."⁵

Interdisciplinary research within the university curriculum evolved in the post war era through initial collaboration between familiar but disparate disciplines in the sciences, these collaborations between biologists, chemists and physicians resulted in the establishment of an entire set of new hybrid investigations that have now become mainstream disciplines in themselves. Biochemistry, Biophysics etc. Such procedural cross-referencing did not permeate design practice until much later and has only recently flourished courtesy of the digital revolution. Currently designers are turning to computer effects,

programming and fabricating techniques and are migrating into fields beyond the indigenous operations of their own practice as a means to expand the potential of their respective mediums, a refreshing transformation given that architectural research permeated little beyond its own conventions during the previous 50 years save a few notable investigations by experimental practitioners such as Charles and Ray Eames, Buckminster Fuller, Archigram, Andrea Branzi, Utopie, etc.. In particular, Graphic, Industrial, Product and Fashion Design procedures offer a wave of new intelligence from fabrication techniques, to marketing strategies and consumer fetishes, issues that (for good or bad reason) are now becoming the new codes of architectural practice, while the more technical disciplines such as Computer Science, Environmental and Kinetic Design and Material Science offer less specific design clues but sophisticated technological innovations that have nonetheless enormous power to re-configure the built environment.⁶

My seminar is defined as a research lab where students are actively engaged in the pursuit of contemporary design procedures, of a cultural, production and technical nature and in the behavioral and social implications of these techniques on the politics of domestic space. This format attempts to encourage students to begin to look outside architectural convention⁷ as a way to inform their work as well as providing the opportunity to embark on a field of expertise that might germinate into more precise investigation at a later date. The seminar therefore permits students to indulge in concentrated autonomous study while at the same time reap the benefit of being a team player in a greater communal effort. The seminar observes contemporary procedures in other fields of operations that when removed from their host environment might inform new spatial organizations of a domestic nature. Such an exercise necessitates the adoption of an interdisciplinary agenda, and so research is opened up to include the industry and the resources of the University and thereby precludes the confinement that results from limiting research to customary architectural precedents. Each participating student selected a specialist topic from a pre-assigned list, on which they will become an authority over the course of the semester. The eight specialist topics for investigation⁸ in the seminar are listed below

and are grouped together under three main headings, Culture, Production and Technology. Cross-referencing between topics is encouraged and most likely will be inevitable as the semester progresses. Each topic has been selected because it either contributes to, or informs, an important aspect of "Contemporary Design Intelligence". The topics cover a wide range of issues but all have in common a particular "attitude" to design which stems from a fascination with interdisciplinary practice whereby the architect as a designer is increasingly committed to look at the logic and operation of other design disciplines and industries (computer programming procedures, industrial / product design, material science etc.) in order to produce new domestic organizations that are both culturally and technically significant. This reflects our time where the previous distinct boundaries between artistic disciplines are increasingly blurred and where cross- bred culture and design permeability are becoming the dominant informants of practice.

The Specialist Topics are as follows:

A. Culture Architecture and Consumerism

Is it possible that a consumer could go to a store and purchase a house in the same way as one might buy a car or a computer or a designer suit? How might we design and market a generic housing prototype that could be bought "off the shelf" or one that could be ordered with customized features?

How might consumer preferences and production formats that drive other design disciplines, such as fashion design, product design or packaging protocols etc. inform your ideas?

Resilient Lifestyles

The single nuclear family unit is no longer the average client base. A large proportion of the world's population lives in transitory housing and more people combine work and living in the same surroundings. Adaptability, flexibility, temporality and transition are therefore the new words of domestic culture. How might we conceive of the house as a continuously transforming / mobile organization? How might contemporary lifestyles more readily inform a domestic system?

B. Production

Furniture Systems + Component Design

Recently there has been a renewed interest in component design that has mainly been triggered by experiment in digital fabrication techniques. Due to their smaller scale and reduced economic dependence, components and furniture systems are areas where experiment is primarily investigated at this point in time. Designer's very often use the design of components as test beds to investigate ideas that may progress into larger scaled events at a future date. How might recent furniture and product design techniques help inform new housing environments?

Prefabrication + Mass Customization

Previously mass production techniques operated on the fabrication of large quantities of similar components as a way to maximize efficiency and reduce production costs. Today, due to an increased heterogeneous consumer statistic, production techniques are being forced to operate on a more varied level whereby increased customization is built in to the production process. For the past 30 years the Auto industry has successfully operated on this premise. How might fabrication techniques in other industries affect the way we might design and build new housing environments?

C. Technology

"Smart" Environments

Most environments are passive, - deaf, dumb and blind, unaware of their inhabitants and unable to affect them in a meaningful way. The word "smart" is now a ubiquitous term applied to environments that have inbuilt sensory attributes that both enhance and respond to the people and activities taking place in them. Materials and components can now be programmed to be sensitive to and interactive with the physical environment that surrounds them thus creating new subject / object relationships. How might we best capitalize on "smart" technology as a new way to produce or "effect" domestic space?

Dematerialized Space

There are technologies available that could be used as space making systems, either in combination with or in lieu of traditional space making components meaning that the spatial delineation of the built environment need no longer be based solely on the organization of

physical and material systems. How might the probability of an increased dematerialization of space resolve itself within a domestic environment?

New Materials

The materials we use for domestic construction are still predicated on issues of necessity, availability and economy. As a result wood, concrete and metals such as steel and aluminum will continue to be the mainstay of generic construction for a long time to come. With this in mind, where might the Architect introduce new materials into domestic construction? How might these new materials match the economic and functional attributes of traditional forms of construction.? We are interested in those materials that are ecologically friendly, recyclable, have memory capabilities or can easily accommodate complex shapes.

Information Environment

How might architectural intervention of a domestic nature anticipate the spatial politics of the information age? Currently the house is sandwiched between the global world of communications technology and the local politics of domestic activity. How is the relationship between the public and private operations of the house altered and transformed due to the presence of information media? How might you map the relationship between mediated and constructed space.?

2 SPECULATION

- To assume risk in hope of gain;
- To meditate or ponder on a subject;
- To spy out, or examine;
- Marked by questioning curiosity;
- Theoretical rather than demonstrable;
- Demonstrable rather than virtual;
- To give in to conjecture

While research comes in many formats and employs many different intentions, it nonetheless may be evaluated in one of two ways, at an abstract level, through the autonomous intelligence of either part or all of the research itself, (Utopian) or by its successful or at least attempted application or improvisation to a spatial event. (Opportunism) The seminar is interested in the latter form, where

the Architect as researcher not only embraces the active pursuit of intelligent information, but also formats this information into a strategic contention and opportunistically applies it to an architectural paradigm where possible. The act of speculation presupposes an element of risk and the students therefore are encouraged to view their research tentatively, since not all research agendas will lead to profitable results, and similar to a professional bond trader, care is taken to ensure certain strategies are in place to minimize loss.⁹

Recently, due to an increased interest in cross-disciplinary practice there are now a new breed of architects who have begun to appropriate technical procedures prevalent in other industries as a way to inform their research, to date the most noteworthy examples include the improvisation of intelligence embedded in military research¹⁰, space travel¹¹, computer programming and material sciences¹². Likewise, the medical industry with its sophisticated research and innovative application of contemporary technical intelligence provides another rich site for architectural speculation.

For example, I came across an Article in Wired Magazine, (August 2001) titled, "The Next Brainiacs" by John Hockenberry that described how a leading neurologist, (who I will presently refrain from naming,) surgically implants small glass cones with electrodes into the brain of stroke and paralyzed patients that synthetically replace dormant brain signals and mimic nerve impulses to induce muscle motion. Described as electronic/ biological hybrids, these interfaces physically meld with the brain tissue through time and essentially allow paralyzed patients to manipulate objects in the built environment. As an architect, I immediately found myself speculating on the potential that these "Alternative Brain Body Interfaces" might have over and beyond their fantastic medical purpose, i.e. their application within a wider more mainstream environmental framework. The fact that this research was published in Wired, a mainstream design magazine, where incidentally the neurologist in question, is referred to as a designer rather than a medical expert, also acknowledges the potential significance of the work beyond its intrinsic medical importance.

You may ask what the work of an eminent neurologist has to do with technological innovation in the house? And the answer is - Everything. -The work of this neurologist has specific interest to what is now commonly bracketed as kinetic design practice, i.e. the manufacture of responsive environments. The word "smart" is now a ubiquitous term applied to environments that have inbuilt sensory attributes that both enhance and respond to the people and activities taking place in them. Materials and components can now be programmed to be sensitive to and interactive with the physical environment that surrounds them thus creating new subject / object relationships. As such, these material / electronic hybrids have enormous power to re-configure the spatial politics of the built environment similar to the brain body interfaces, which in the article are described as electronic / biological hybrids that have the ability to re-configure the dynamic of the paralyzed body in space.

While the seminar is primarily research motivated, each student will format his or her research on one 24" x 36" sheet. How students speculate on their research and apply it to a particular domestic environment is also important and will include one of the following; a written description, a drawing or a small 3d or physical model. For example, the neurologist mentioned above has been invited to present his research to the students in my seminar in the coming week. The presentation falls under the research category, titled "Smart Environments". It is hoped that one student will appropriate the research, and after some strategic improvisation, make one speculation on its potential application in the home. There will be a final public review of the work with external critics on the last day of class

3 PROTOYPING

- *An original type, form, or instance that is a model on which later stags are based or judged*
- *An early typical example*
- *A primitive or ancestral form or species*

3.1 The house as prototype

Whether through real time problem solving or hypothetical experiment, research often finds its output in the format of a

prototype, an anticipatory device peppered with improvised propositions and speculative conjecture. Since the war and for a number of reasons, the single family-housing unit has manifested itself as the chosen prototype through which extensive research has been formatted. America saw itself lead the way in suburban prototypes in response to new production processes that were systematically applied to remedy housing shortages after the war while countries like France, Germany and England developed more urban systems due to the necessity of post war urban regeneration. With its relatively small scale and a continuous housing demand in many peripheral urban environments, the housing unit still holds strong as a rich vehicle through which current contemporary technical, production, social and economical procedures can be directed.

3.2 The Industrial Design Model

There is currently a renewed interest in innovative component design that is stemming from progressive production processes, digitally directed formal investigations and sophisticated fabrication techniques, that more often than not are being borrowed from other industries and design disciplines. This (not so) new wave of thought acknowledges the power of the small component as a tool to recondition a larger organization and so limited interest is placed on prototyping new space as opposed to prototyping new composite systems that with intelligent application, re-condition space indirectly. In the past there have been many practitioners that have employed such specific research and valued the importance of component design as a way to re-configure the house. Whether it be through the improvisation of new technology with universal production processes, such as Fuller's core for his autonomous living package, or Wachsman and Prouve's innovative joint and connection details to join modular panels in prefab housing, to the material experiments of Pascal Hauserman (plastic capsule housing) and Utopie's (pneumatic structures) of the 1960s.

The seminar interrogates the concept of a prototype or more specifically the act of prototyping as the end product(s) or the format through which the research and speculation described earlier is conducted. In an attempt to prevent the architect's customary

pursuit of a single optimal solution, (the singular end product) the seminar will preference a prototyping format, more commonly associated with industrial design practice, that being the production of a series or a set of alternative scenarios, a process now made more cost effective with new CAD/CAM processes. In other words, rather than the research and speculation culminate in the prototyping of an entire new house of the future, the students will instead prototype smaller scale individual domestic environments, (an external skin, a piece of furniture, an assembly component, a "smart" partition etc) that arise from the research and speculation of their selected research category. A field- trip to a well-known local I.D. design firm was recently organized to familiarize students with the practice of multiple prototyping as well as the current rapid prototyping techniques that currently make this possible.¹³

4 CASE STUDIES

No matter how innovative ones pedagogical methodology maybe, the incorporation of appropriate precedents is still a necessity, since teaching is always best directed through example. In addition to passing on direct and valuable information, case studies focus, guide and direct the other more arbitrary or organic thought processes of the class. In an attempt to help situate and focus the student's research, housing experiments (both previous and current) conducted by Architects and designers are presented as part of each research category over the course of the semester. (For example, post-war domestic and fabrication experiments by Charles Eames, Cedric Price, Andrea Branzi, Buckminster Fuller, Kas Oosterhuis, The Smithsons, Archigram, Greg Lynn, Constance Adams, Walter Gropius, Jean Prouve, Ionel Schien, Decoi, Hariri+Hariri, Herzog and DeMeuron, are just a few examples included in the case studies.) The work of product designers, Ettore Sottsass and Karim Rashid, Industrial designers such as IDEO and fashion designers such as Lucy Orta and Issey Miyake are also documented in presentations in order that students appreciate innovation and research in other design disciplines and how it might be further speculated on. For example how might Issey Miyake's new A-POC¹⁴ clothing line inform how future components in the house might be mass produced but customized according to specific user preferences. The case studies are therefore used to ground the research and speculation and guide students with their

own particular interests.

In summary the pedagogical approach to my seminar can be summarized as a polyvalent weave, consisting of interdisciplinary research and prototypical speculation with readings and case studies offering background and supplementary documentation. The readings selected included literary and cultural theory as well as more technical and scientific information on new innovations in industry. The readings are intended to be general and preferably non- architectural, although this is not always the case. They are meant to give each student a broad understanding of what it means to be first, a "designer" while the case studies frame the discussion with a more detailed analysis. The third thread in the weave is the research itself, conducted by each one of the students. The research is conceived as an independent investigation that follows on from the general readings and the specific case studies. The last thread in the network includes lectures given by visiting guests. In summary the class is to be read as a series of parts each composed around a particular species of information but seen together as a complex network of information.

Notes

- 1 The title above, The Ideas.Circus, was a term used by Archigram in 1969 to describe a temporary mobile laboratory of about 5 or 6 vehicles intended to circulate between the provisional centers of England in an attempt to tap into and supplement where required, information and documentation in existing educational facilities with the effect of creating a national active information network. The term suggests a sort of dynamic "data sponge" constantly absorbing and dissipating information as it moves from place to place.
- 2 There have been however numerous examples of experimental housing in collaboration between private practitioners and industrial firms. A good example is the Monsanto House by Richard W. Hamilton and Marvin E. Goody, sponsored by the Monsanto Plastics Corporation in 1954 and John Entenza's sponsorship of the Case Study House program in California, beginning 1949.
- 3 One might argue that this was in part due to an aloof academy maintaining distaste for collaboration with its construction brethren or by the sincere disinterest on behalf of the construction industry in innovation and research due to financial and operational implications.
- 4 The most obvious model here is the on going collaborative research project at MIT, titled House_n project coordinated by Kent Larson. Also, The Translucent House Project ongoing at the University of Architecture in Barcelona - E.T.S.A.B. with Professors Alfons Soldevila and Josep I. de Llorens.
- 5 A previous precedent noteworthy of mention here is Konrad Wachsmann's, center for research in industrialized construction at USC, an internationally recognized authority on prefabrication, Wachsmann was the Director of the Institute for Building Research from 1963 to his death in 1981, and had a lasting influence on the technology curriculum.
- 6 Thomas L Friedman, *The Lexus and the Olive Tree: Understanding Globalization* Farrar, Straus and Giroux: New York, 1999. Chapter 1 Tourist with an Attitude. Pages 3-24
- 7 Reyner Banham addresses this issue in his article "1960's Stocktaking". He writes, "*In spite of the much debated revolution in architecture of our time, the roles of architects have not been significantly extended, and by certain extensions of role - into product-design for instance, seem to have been tacitly abandoned since the nineteen thirties. There are probably a number of reasons for this, but most of them, including the legally enforced codes of conduct that architects have created for themselves, are traceable to a feeling that modification of the accepted roles beyond a certain point threatens the integrity, or even the identity, of the profession.*" Peter Reyner Banham, "1960 Stocktaking" in *Design by Choice: Ideas in Architecture*, Ed. Penny Sparke, New York: Rizzoli, 1981
- 8 40 years later, Bruce Mau picks up on a similar theme in an interview with Paola Antonelli, Design Curator at MOMA in NYC by describing the design process as a "*horizontal problem*" that is mistakenly addressed in a vertical dimension. By this he means that design processes should be addressed latterly by deploying a lot of disciplines simultaneously, rather than through isolated vertical slices of specific disciplinary operation. From "Interview with Bruce Mau", published in *Workspheres: Design and Contemporary Work Styles*, Ed. Paola Antonelli, New York: MoMA, 2001.
- 9 What Reyner Banham in the same article describes as "operational lore" a term borrowed from a presentation made by Charles Eames in 1959
- 10 This specialist list of topics was devised to include issues essential to an investigation of new housing environments.
- 11 The architect as researcher is therefore not just an inventor, but a strategist, a tactician and an improviser, what Peter Cook terms the "boffin-designer." From, Peter Cook's *Experimental Architecture*, London: Universe Books, 1970.
- 12 The Global Positioning System, (GPS), and other military surveillance techniques employed by Paul Virilio and Diller and Scofidio are

examples here. GPS technology was born as a result of the problems experienced by the US military forces during the Vietnam conflict. One of the main difficulties for the troops on the ground was how to keep in contact with each other, especially due to the harsh jungle terrain.

- 11 NASA's sophisticated r+d programs also deserve mention. In particular Constance Adam's "Trans-hab" project for living quarters for astronauts on the Mars Space Station, due for release in 2004. Ted Kruger is also well known practitioner and academic exploring the intelligence in space programs for his research titled "Architecture of the Extreme Environment"
- 12 Of interest here is Peter Testa's work at MIT. His Agency Research Program involves a methodological component, researching evolutionary programming techniques, and a design component, applying advanced building and information technology to the development of digital and physical prototypes for the next generation workplace.
- 13 Industrial Designers when presented with a new design project, first come together as a group for what is called in I.D. circles as a brainstorming session, where no idea is too ridiculous to be trashed out. Post it notes with ideas, words, diagrams and stories are pinned up around a conference room and photographed. After an intense design charette, a series of alternative prototypes are manufactured and are in turn released to the public for trial. User interactions are monitored, discussed and used to inform the editing process of the next phase of design, where one prototype is selected and further modified. Only one of the original prototypes will eventually make it to the manufacturer and the public market, but one that arose from a process of elimination of alternative options rather the pursuit of one single idea throughout the entire design process. For more information, please see Tom Kelly's, The Art of Innovation: lessons in creativity from IDEO, America's leading design firm, Currency, 2000.
- 14 what is 'a-poc' ? - over-length sweaters, dresses off the roll - 'a-poc' is based upon Miyake's first design concept, a piece of cloth, is a new and unique suggestion for everyday life, which goes far beyond the boundaries of fashion. It is made using an industrial knitting or weaving machine programmed by a computer. This process creates continuous tubes of fabric within which lie both shape and pattern. The customer cuts sleeves and skirts exactly to the length he wants. It is an idea that totally overthrows the existing standards for making clothes. 'a-poc' is made in a sequence in which thread literally goes into a machine and re-emerges as a piece of clothing, an accessory, or even a chair. This interactive new method not only reduces leftover fabric but also permits the wearers to participate in the final step of the design of their clothing: they determine the final shape of the

product. Mass production and custom-made clothing, seemingly opposing ideas, become compatible with each other through the wizardry of technology and the fire of imagination.

Bibliography

- 1 Thomas L. Friedman. The Lexus and The Olive Tree: Understanding Globalization, New York: Farrar, Straus and Giroux, 1999. Chapter 1 Tourist with an Attitude. Pages 3-24
- 2 Donald Albrecht, Ellen Lupton, Steven Skov Holt. Design Culture Now: National Design Triennial, New York: Princeton Architectural Press, 2000. (Pages 12-24)
- 3 Julia Kristeva. "Institutional Interdisciplinarity in Theory and in Practice", from The Anxiety of Interdisciplinarity, Volume 2. Ed: Alex Coles and Alexia Defert., Backless Books, 1998
- 4 Peter Cook. Experimental Architecture, London: Universe Books, 1970, Ch.1, 2, (Pages 11-67) +Ch.5 (Pages 112-132)
- 5 John Hockenberry. "The Next Brainiacs"., Wired Magazine, August on behalf of the construction industry in innovation and research due to financial and operational implications.