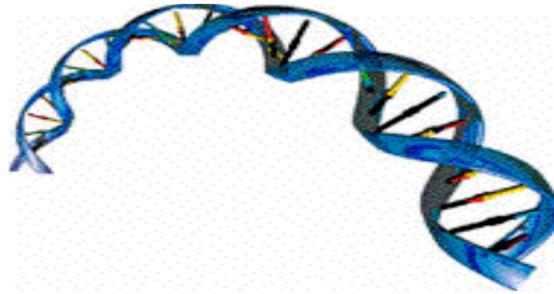


Visualization of the Organization: An Aesthetic Ecology for the City of Newark

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Abstract

Social systems are facing a new set of challenges in the twenty-first century. People from most disciplines have described their concerns in a similar way, yet use the terminology of their discipline. These concepts include “the appearance of dilemmas,” “the boiling point” or simply “collapse.” Terms like “turbulence,” “fear of the future,” “the unknown,” and “emergence” are also common. Often times, short-term solutions are used to remedy long-term problems because they are the easiest to implement. This strategy however seems to exacerbate the problem or simply move it from one area to another. We have ventured far away from real solutions because of how we have been taught to think, as well as from limitations we put on how we communicate with each other. The foundations have been laid for *systems thinking*. This paper builds on them by suggesting systems research that uses aesthetics in problem solving. It is not just art itself that is advocated here but rather an expansion of what we mean by art to include all of the disciplines, as well as art as *a way* of doing things.

If aesthetics is another form of communication what is its structure and how can it inform the development of organizations such as cities? Herein I am concerned with the current state of the city of Newark and seek alternative approaches to planning or design. Planning theories and methods of the last century do not work well today because they were founded on materialism and determinism that dates back to the Industrial Age. This paper suggests that we begin to embrace new ideas such as human movement systems, pattern recognition, and symbolism, while working towards collective transformation of the city. Much of this will involve the acceptance of multiple realities within a city and managing them by communicating through aesthetics.

Keywords: aesthetics, planning, communication, symbols, systems

Introduction

Every child is an artist. The problem is how to remain an artist when he grows up. - Picasso

I was first introduced to the concept of systems and the work of Russell Ackoff by David L. Hawk, a dual-professor of architecture and management at the New Jersey Institute of Technology in Newark, New Jersey. Dr. Hawk was also a former student of Ackoff's at the Wharton School of Business at the University of Pennsylvania. As a second-year, undergraduate student of architecture I was lucky to have been told to "learn to unlearn" what was being passed down to us as "good design." At first unlearning involved reevaluating the role of the architect but later it meant visualizing the city at large. I came to realize that many of the problems cities encounter are rooted in how we learn about our environment. Students are not taught that cities are actually systems or organizations with free, autonomous agents. Instead, we learn that they are chaotic places in need of "control." With the guidance of systems theory I arrived at the role of aesthetics as a critical part of identity formation, decision-making and finally transformation.

One of Dr. Hawk's recommendations was the book *General Systems Theory*, which illustrates how systems theory went from being primarily a mathematical field or hard science to a social one, attracting soft sciences like biology, philosophy and social science (Bertalanffy, 1968). This shift occurred when we changed our view of the world from one of chaos, a nineteenth century scientific perspective, to an organization or system, a shift from machine age to systems age thinking, respectively. The limitations of the Machine Age and the promise of the Systems Age, was clearly described by Ackoff in his 1981 essay "Our Changing Concept of the World." Machine Age was a continuation of the nineteenth century view and was governed by the notions of analysis, reductionism and determinism. These three created a mechanistic world in which the human had no purpose. The Systems age was a shift towards *purposeful systems*, those that consider the environment as an equal player in the functioning of the system, and stresses synthesis of parts to make a complete whole.

What the systems concept meant for the social sciences was described in *Towards a Social Ecology* by F.E. Emery and E. L. Trist. The Forward, written by Sir Geoffrey Vickers, describes how a business organization operates in similar ways to a city, the former being a "socio-technical" system and the latter a "socio-physical system. Both are viewed as having the same fundamental problem – *conflicts of scales*, meaning that new technology and economic trends are out of step with the level of growth each organization actually *needs* to function properly. He concludes by describing the related importance of the "dimension of time" in the work of the social ecologist – understanding the rate at which societies begin to notice (or respond to) changes in their environment in relation to the rate at which the environment itself changes, (Emery and Trist, 1973). This notion is similar to the theory of complexity and redundancy discussed by

cybernetic theorists, who believe that there is only so much the mind can take in of a certain amount of complexity. Anything more than that might result in information overload because the additional parts may be redundant. The brain itself says “time out.”

It appears General Systems Theory has also found its way into the world of art (Huber 1989), leading us to ask fundamental questions about communication through signs and symbols. Hans Dieter Huber describes how the Sculptural Theory of the German artist, Joseph Bueys, which builds on the constructivist movement, holds much promise for the sciences when it comes to understanding the “softer side” of systems theory. By introducing the world of science to that of art, we are confronted with signs and symbolism - their meanings and the roles they play in society. In essence, the process that takes an artist from idea to finished work is an aesthetics experience that uses already established systems concepts like emergence, autonomy, pattern recognition and feedback.

I will attempt to show that understanding aesthetics holds much promise in improving the way we communicate and therefore how we learn. Even when speaking to someone in the same language, miscommunication about values, goals and how to achieve them arise, leading us to form enemies with others who may actually share the same underlying desire for the future as we do. Aesthetics can also help demystify confusions about the real world from what we are told reality is, helping us make better judgments for improving our individual lives and collective systems. Finally, aesthetics can lead the way towards the Universal Age, where man and machines, art and science come to realize their roles within systems and where positive transformation can take place with less time and at less cost. Although this perspective can be applied to any type of organization or community, I will focus on how our knowledge of aesthetics can improve our decision-making ability when it comes to developing the city of Newark.

More and more people have begun to place a higher emphasis on aesthetics and the role it plays in our lives (Postrel, 2003) and (Thackara, 2005) but, there has yet to be a comprehensive articulation of aesthetics as a *way* of doing things. These cultural theorists are really speaking of design, rather than aesthetics, by focusing more on the *product* than on the *process* of design. In his description of the Systems Age, producer-product relationship, Ackoff is correct when he states, “no such law can apply in every environment, because if it did no environmental conditions would be necessary. Thus there are no universal laws in this view of the universe.” (Ackoff, p.22). If we begun to study the producer-process relationship, we may find that there are in fact, universal senses that can be applied in multiple areas. Aesthetics, as a study of the senses, holds much promise in clarifying this perspective. Over the last few decades, a small but growing number of aestheticians are making progress in this arena. They have expanded the meaning of art to include the crafts and most if not all disciplines, as seek ways to communicate ideas that can be applied in multiple areas.

The city of Newark will be used as the “research lab” for testing this theory. Seven years ago, while an undergraduate student, I lived in different parts of the city, from housing on Martin Luther King Boulevard in the Central Ward to the Forest Hill section in the

North Ward. Over time, I became an active participant in the local arts scene while developing the research ideas presented in this paper. Both activities have strengthened each other through constant feedback from the academic community and from the larger arts community, the former being a form of action research and the latter, a literature review.

I will use the New Jersey Abbott School Construction program as a starting point, as I have spent the last two years following its development. What started out as an effort to build educational facilities in low-income disadvantaged neighborhoods has now turned into a discussion on how best to build an entire city. This project will be my point of departure, but certainly not the endpoint. Schools are now seen as prime catalysts for economic development and a way of revitalizing depressed communities, yet the political and economic structure they operate within often prevents this from taking place. Planners who now advocate better school facilities are in danger of falling into the same trap – architectural determinism – as twentieth century planners did with public housing projects. Good housing, designers proclaimed, would improve health, lower crime and increase the quality of life in disadvantaged neighborhoods. The opposite turned out to be true. The health of residents continued to deteriorate, crime increased and the gap between rich and poor grew even wider than before. We are now seeing a repeat of this with the Abbott School Construction Program, in which large sections of neighborhoods have been cleared for school facilities that may never get built. Certainly, we need to change the *way we think* about planning and our attitude towards development.

On a global scale the process that spatially disenfranchises groups, creating massive slums in the shadow of high-rise towers, has been termed *renucleation*. At the local level the process is known as *gentrification*. Planners are now on the verge of repeating the same mistake, by suggesting that better school buildings will guarantee improvement in learning. Billions of dollars have already been wasted on school construction in the state of New Jersey because its political and economic environments were ignored. Planning has been said to work best in *environment-full*, not *environment-free* situations, (Ackoff, 1999). Planners, it seems, may be more concerned with the survival of their institutions at the expense of disadvantaged populations, including our youth. If the state of New Jersey, due to its size, cannot change the way it does business quickly enough to support the needs of its residents. Then perhaps the job should be left to each city. With a new administration underway in Newark there are now greater possibilities to creating positive changes than before.

Finally, the business of building is one of the least receptive to change. Construction companies have been criticized as one of the slowest to innovate because they hold on to the status quo and some have even dared to say that the entire industry is completely backward, a nineteenth century affair rather than a twenty-first century one (Woudhuysen and Abley, 2004). Softer forms of communication, such as negotiation has greatly helped other industries like the Internet encyclopedia, furniture companies like IKEA, or the software company LINUX (Parhankangas et al, 2004). In these industries, negotiation is an act that recognizes and appreciates differences in aesthetics, or management style. Other methods include story-telling and the creation of *dilemmas*, as is currently done in

business schools that teach ethics. Finally, by studying the building of educational facilities, we can look at another industry in need of improvement – public education. Perhaps by learning how to best build a city, we can begin to teach youth new ways of learning so they can purposefully build their lives. This is not an issue that I will go into depth trying to prove. Rather it is an implied suggestion throughout the paper knowing that Newark has a troubled public education system. Actually most, if not all, of the social systems in Newark show a need for identity formation and transformation. Understanding how to communicate through aesthetics holds much promise in addressing these needs.

Old and New Approaches to City Planning

The building of cities is one the oldest forms of human social activity. The great civilizations of Egypt, Shang China, the Maya and Aztecs and Inca, and the Yoruba in West Africa, although distinct in their own right and despite differences in lifestyle, thrived for hundreds of years with similarities in their socio-political organization (city-states), economic structure, and world belief system (Trigger, 2003). The Yoruba, for instance, traditionally believed in a dual world-system called Ifa - one made up of the physical world and all of our actions within in it, and another intangible or spiritual realm operating in the lives of ancestors past. Interaction between both realms informed daily decision-making as well as provided answers to large complex problems beyond the reach of basic common sense (Johnson, 1921) and (Pemberton and Afolayan, 1996). An important method for retaining constant balance was through corporate story-telling with hidden lessons and morals for daily living. Some business schools use this method when teaching corporate ethics and in teaching aesthetics, aestheticians have used the method in the creation of hypothetical *aesthetic dilemmas*, (Arrell, 2006). I will expand on this idea later on when I speak of how aesthetics can inform decision-making in the Abbott School Construction Program.

Modern building methods are rooted in the guild system of Medieval Florence, a time when construction of large cathedrals dominated urban activity, (Goldwaithe, 1980). The twentieth century city functioned like those of early civilizations however the belief system started to change from embracing ideas to embracing buildings. This was the first aesthetic dilemma. Western society became highly materialistic while the intangible realm took a back seat. People built simply for the sake of building, placing less value on what the meaning of the city actually was. As art and science went their separate ways so did design and construction, creating the second aesthetic dilemma. Science would come to dominate the world view as it could prove, with new technology, that it was better at problem solving and predicting the future (Teich, 1972).

With the arrival of the Industrial Revolution, we lost the crafts – the activity that thrived during the building of Renaissance Florence – but we also saw the holistic building process split into two parts – design and construction. High volumes of building created competition among different city-states and places of worship became more than that, they turned into status symbols. Architects recognized this change and rejecting the notion that any crafts person could qualify as an architect, “ideas about architecture arose

independently of the building process, (Goldthwaite, p.355). The split widened as time went on and with industrialization and mass-production virtually replacing the craftsman, architects were positioned to win-over new clients simply with their ideas.

The industrial city posed health risks to human life. Polluting factory buildings and unhealthy housing conditions affected air and drinking water. In their effort to design a city that “works” many twentieth century architects and planners did not view the city as a system but as a wild place, out of control and in need of taming. Each planner gave his idea, or Ideal City, a grand name and proposed that this would be the cure to the problem of ‘the city.’ With the exception of Le Corbusier, their solutions often entailed leaving the city altogether for greener pastures in suburban and rural settings. The limitations of Ebenezer Howard’s Garden City, Patrick Geddes’ Regional Plan, Corbusier’s Radiant City, and Burnham’s City Beautiful movement are harshly criticized in the book of the late Jane Jacobs, *The Death and life of Great American Cities*. A myriad of supposed utopias, Jacobs states, treated cities as “sacrificial victims” (Jacobs, 1961). Planners ignored the larger economic and political environment in their design process and therefore, could not reach the root of the problem. Their grand schemes turned out to be short-term solutions which displaced many residents or kept them further dependent on the state.

A few planners have begun to grasp the intangible milieu in which urban development takes place, prompting the emergence of the new political-economist (Fainstein, 2000). Criticising the New Jersey State Plan for urban development, Susan Fainstein, a professor of Urban Planning at Columbia University, states,

“...in order to win approval of the various participants in the planning process, the plan contained only weak requirements for construction of affordable housing, suburban integration, and compact development, even though lack of housing for low-income residents, suburban exclusion of the poor and minorities, and lack of open space were identified as the principal problems that planning was supposed to overcome. Then, despite the moderate nature of the plan and the cross-acceptance process, its implementation has been half-hearted at best and often strongly resisted by local planning boards. The principal result of consensual planning in New Jersey has been the continuance of a system whereby the market allocates land uses.”

In the same article Fainstein also criticizes the New Urbanist movement as possible repeat of nineteenth century approach to planning which leaves room for architectural determinism. New Urbanist theories and calls for sustainability do not take a systems perspective, working on “smart solutions” within their discipline in the hope of solving larger societal problems. Fainstein stops short of offering new solutions, however stating the problem alone represents a shift towards synthesis and away from analysis and segmentation. Segmentation has been described as one of three forms of splitting - different parts of a system pursuing their own ends without making any reference to the whole (Emery and Trist 1973, pp). With synthesis, planners can systematically study the history of building over the last millennia, not just from a design perspective but through the lens of the construction industry, and begin to design comprehensive solutions. It will most likely require an expansion of the current meaning of architecture beyond the physical building to *design in a larger sense*. Painting a correct picture of the reality of

cities also places the value of ideas over mass – a move away from materialism – allowing questions to now be posed on what is most important to human development. As we begin to focus on ideas we can introduce new ways of communicating ideas so that all stakeholders feel they are a part of the process.

Developments in Communication

Most of the time when we speak about improving cities, we find ourselves talking about improving the way we *communicate* within the system. Since organizations are made up of people, it makes sense for social scientists to understand how groups of people interact with each other. In the mid-twentieth century, communication with machines (telephones, computers and wireless technology) became an additional factor to consider. Initially, we thought we could replace human systems with machines, a deterministic perspective rooted in the industrial age when human labor was simply an extension of the machine. For some, the result was an over-reliance on technology and its ability to provide “quick fix” solutions to large complex problems and for others, technology was viewed as a means to an end, not the end in itself (Teich, 1972). The debate will continue throughout the systems age as humans and machines learn more about themselves, about each other and the roles they need to play within organizations.

The human-machine debate occurred in almost every discipline, including planning. Around the same time the idea of systems was taking root, the term community was redefined as more than *place*, but as the interrelations between individuals or groups and who they communicate with regardless of where they are physically (Mandelbaum, 1972). Organizational problems no longer centered around the rearrangement of people in space or space itself, but around why and how people communicated with each other and to what extent. If the guild represented a shift away from moving ideas to moving mass, this represented a shift in the opposite direction - from the movement of mass to movement of ideas. A universal tool of communication which could be used by various industries and multiple disciplines would be needed. For planning this concept would pose a new threat as the information highway challenged the dominance of the physical highway as the preferred mode of transport.

The rise of the Internet and fiber optics and telecommunication blurred the lines between transportation and communication - the former being concerned with the movement of mass and the latter with the movement of information or ideas. Knowledge sharing could occur at much faster rates than through conventional methods, causing the shrinking of time and space. In the realm of planning, various attempts have been made at understanding the “physical highway” and “information highway.” In some cases, new technology has been described as if it were a merely a new way of describing the “agora” or physical infrastructure in general, (Mitchell, 1995) and (Mitchell, 2000), without a deeper level of understanding as to what potentials lie in within it – (going back to Mandelbaum’s redefinition of *community*) enabling the transport or communication of ideas that can improve the human condition regardless of place. By not embracing this definition, one can safely predict that “renucleation” will continue. In the book *e-topia*, this is described as a continuation of the “spatial division of labor,” a world where “things

will still have their places,” and where “it will remain possible to describe neighborhoods, cities, regions, and nations in terms of their characteristic clusters of economic activities,” (Mitchell 2000, p.77). The problem with this argument is that it doesn't recognize that new technology gives us the opportunity to do more with less. By using technology in the right manner, problems like renucleation and gentrification can be prevented. People can remain in one place while the city still thrives because of the power of the ideas within it.

Unlike Mitchell, who discusses theories on digital communities by way of a planner's background, Steven Johnson discusses theories on cities by way of a computer science background. This emerging trend towards interdisciplinary research holds much promise for the development of learning environments that combine planning (or architecture) and business (or management) so that as we learn about the business of cities, we can also learn about the city as a business. Johnson sees many parallels between cities and software, as discussed in his 2001 book, *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*. It in he illustrates how we can better understand the way cities work with a focus on theories of emergence, adaptation, feedback and self-organization. He compares the guild system to computer software that simulate living ecologies and to biological phenomena like cell division. For Johnson, there was something about the silk weavers in Florence that allowed them to remain in the same location after a thousand years of change. He believes this is due to the recognizable pattern of the city. He states, “a city is a pattern in time,” (p. 104). As generations come and go the city implants itself into the unconscious mind – into memory –allowing it to retain its shape.

Johnson began the chapter by putting aside the “aesthetic accomplishments of the Renaissance” (the artistic works of Leonardo da Vinci and Brunelleschi) not realizing that the guild system he was about to describe was also and aesthetic accomplishment. Planners of the times understood the need to respect the *movement system* of the city, a term coined by the twentieth century urban planner, Edmund Bacon. In his book, *Design of Cities*, he states, “The quality of the land, made articulate by movement systems, is or should be a generating force in all architecture.” For Bacon therefore, architecture followed the way people already moved, rather than control movement. This is also what was meant by *form follows function*, a concept largely rejected by Deconstructivist architects in the latter half of the twentieth century, who began to place the value of the machine above that of humans.

Effectively demonstrating the thin line that exists between community and communication, Johnson suggests that we recognize the shapes and patterns of our world that overlap between natural and man-made systems. This will help us better understand how cities work as organizations and thereby begin to improve our quality of life. Johnson's suggestions lacks the fear of the unknown traditional planners develop when faced with the question of new technology, and unlike Mitchell, recognizes the creative potentials of technology for improving the city. Pattern recognition is one's ability to find symbols in the environment that are repetitive.

The problem of interdisciplinary communication is still being addressed, but it seems we are getting closer to solving it. Some find more promise in transdisciplinary communication, which is simply another way of saying aesthetics. Now we are faced with the task of visualization. We need to find new tools for envisioning and designing our desired future – tools that were not utilized in the industrial age. If educational or learning systems are to play a critical role, what methods can be used to develop the mental models of students? We can begin by understanding the role of aesthetics as an alternative method of inquiry. What role does it play when organizations, in the middle of turmoil, face the need to start from scratch?

Table 1. Description of attitudes and behaviors over time

Period	World view	Behavior
Machine Age	World as chaos	Analysis through segmentation and a top-down approach to planning/management.
Systems Age	World as an Organization	Synthesis through Communication of various parts
Aesthetic Age	World as Multiple Systems	Visualization through Sensing and Negotiating

Systems Age

Machine age to systems age: (gaps in the theory – the machine age said you could produce more energy (Work) by using up more space and time, the systems age challenges this and hints at it in towards a social ecology – that we need to produce more energy (Work) using LESS space and time. (heading towards a universal age...the universal age will require us to communicate with universal senses – aesthetics comes in here – not with common sense – to aid in our decision-making)

Aesthetic Age and its Symbols: Collecting the “Data”

In the book *Karaoke Capitalism*, the authors provide with a new vision of management in the twenty-first century. They describe how we have moved out of the age of the corporation into the age of the individual, “today everything is individualized. An open world requires open systems and an open architecture...Work against openness at your own peril,” (Ridderstrale and Nordstrom 2004, p.7). This process will then deliver innovation, rather than imitation, it will embrace risk more openly and be more experimental. If businesses are becoming individualized, it begs the question, should planners do so as well? Perhaps each one of us should become a planner in our own right, creating and defining spaces according to our individual lifestyle and tastes, rather than someone else’s. This type of self-governance requires a strong sense of identity and the ability to transform the way we have been doing things over the last century. We will need to find the data that will generate a “growing sense” of what the city is. To create a new identity for the whole city we will need to reconcile that there are multiple identities within it on an individual and group level.

Symbols inform our decisions. They are our cultural data. An aesthetic is the totality of all symbols that combine to produce a coherent culture or form, and its ecology is the natural development of the sense of that culture. Although we may not be conscious of our use of aesthetics, we apply it almost every decision we make. We use it in personal lives when deciding on what clothes to wear in the morning to business situations like determining what candidate is best for a position. Each of our individual decisions become collective decisions based on inherent values and beliefs. Maintaining the new culture is dependent on the strength the relationship between two or more symbols.

Why has it taken us so long to arrive at this point? As the nineteenth century solidified the role of the scientist, artists were pushed to the side. During that time symbolist theorist Albert Aurier recognized and described the pattern surrounding him, “...the criticism of this century has had the tendency to be scientific. It has been peculiar to the nineteenth century to try to introduce science everywhere, even where it is least concerned...these natural sciences, being inexact, in contradistinction to the rational or exact sciences, are by definition not able to come to absolute solutions...they are responsible for the poorness of our art, which they have assigned exclusively to the domain of imitation,” (Selz and Taylor, 1968). Aurier is really talking about the art of doing things, not a piece of art you would hang on a wall. The art of doing things was lost in the industrial age, but attempts have been made to bring it back.

The relationship between aesthetics and social systems lies in the work of Joseph Beuys, a German sculptor and performance artist who received international acclaim in the 1960s. He coined the term *Social Sculpture*, a theory which held that politics, law, economics, and science must be rethought on the basis of a widened definition of art (Huber, 1989). Beuys work was meant to get a reaction from the audience, whom he viewed as active participants or an extension of the work of art. His choice of materials, including blood, drew the attention of the viewer and stirred deep thought and emotion. The theory suggests that the individual affected by the work would go and share his

senses with others, creating a collective sense development that can be called an aesthetic ecology.

This process can work well for natural systems, and progress can be seen with artificial systems as well. Computer software programs are increasingly autonomous and in fact, causing the hardware to shrink in size – doing more with less. With cities constantly searching for new ways to create jobs for residents, looking to build more projects, and seeking higher volumes of revenue, more is always better. It is not clear if the the capitalist system is driving this pattern or if city officials simply aren't investing creatively. Assuming it's the former, the book *Natural Capitalism* (1999) by Hawken, Lovins & Lovins, speaking to the world of business, politics and the economy at large, addresses the need to bring capitalism in line with nature by exposing how current business practices are destroying the environment. He addresses one underlying ingredient for organizational change – the need to change the way we think! To do this effectively we need to develop learning organizations that provide us with a new *mental model*:

*The largest institution addressing mental model is our schools. Colleges, universities, and public schools can change their impact on the environment in two fundamental ways. **They create the citizens, MBA's, engineers, and architects that create our world. At the same time, they spend \$564 billion a year to do so, including \$17 billion annually in new construction on colleges and universities.** Oberlin Professor David Orr, the leading spokesman for integrating the environment and education, points out that a large segment of that money is spent to purchase energy, materials, food, and water in ways that are every bit as inefficient as this book outlines. Orr believes that changing the procurement, design, and investments made by our educational systems represents a "hidden curriculum" that can teach, as "powerfully as any overt curriculum, a more comprehensive way of seeing the world that is the foundation for a radically different curriculum than that presently offered virtually anywhere. In every respect this is a challenge of how we think which makes it a challenge for those institutions purporting to improve thinking. Much of the change in outlook and perspective called for will not happen in the time available unless schools, colleges, and education get it.*

Mental models are important, but they do not emerge as easily in the institution of the university as they do within each individual. The excerpt above ignores the fact that the student-body IS the school. It leaves room for continuing a top-down management approach so common in nineteenth century thinking, but inappropriate for the systems age. The authors are correct in showing that the way we do business does need to change, but they are seeking change within the very institutions that helped create the problem. The university may serve as a platform from which research takes place, but it will be up to individuals to create the change. The mental models we need will come out of the proper understanding of symbols in our environment, regardless of who does it. For cities, the art of management would recognize already existing patterns of movement and use this to inform the building process. Today, movement occurs at both local and international levels.

The City of Newark

Newark is the largest city in the state of New Jersey. It was first settled by Native American tribes who used the land for fishing and hunting and then, by a group of Puritans led by Robert Treat. Arriving from Connecticut, Treat bought Essex County from the Lanape Indians in 1666. More immigrants soon followed, mainly from Ireland and Germany, however Newark remained town-like, with dirt roads and horses, until the Industrial Revolution. This was a period of prosperity for Newark and inventions sprung up in different parts of the city. The railroad built to connect Newark to Jersey City and New York, made it easy to commute and increased the opportunity for trade.

More immigrants later arrived in the early twentieth century from Portugal, Italy, and Eastern Europe, to escape the First World War, in search for work and to build a better life. The need to develop physical and social infrastructure to carry the population became evident. As did many other cities in the North, Newark also became home to African Americans who migrated from the South in the early 1900s. For many, factory work was a way out of the harsh sharecropper system while others, watching how new inventions like the cotton-picking machine rendered their skills useless, looked for work in ‘the promised land’, (Lemann, 1991). Similar to the Puritans who came earlier, the city of Newark became the chance for a fresh start, however unlike them, they had less capital to buy homes and start business. Many were housed in federally subsidized housing projects, an informal housing market geared towards affordability, but unfortunately, also kept citizens dependent on the state.

The economic tipping point for Newark occurred in the 1960s after the police shooting of an unarmed taxi driver triggered urban unrest within the African-American community. Just like in other cities that experienced the same situation, extreme fear caused “white flight” to the suburbs while major businesses fled to other towns in the state (Jackson, 1985). The residents that remained suddenly became unemployed and were left to the devices they had for daily survival. At the macro level, the federal government was called in to govern urban systems like housing.

Housing conditions deteriorated during this period due to lack of maintenance and fiscal mismanagement. High levels of unemployment increased the rate of crime such as drug trafficking and murder. Planners, ignoring this condition, widely advocated that new housing design or a *defensible space* fashioned after Le Corbusier’s Tower in the Park, would lower crime rates and revitalize inner cities (Newman, 1972). Despite their good intentions, the exact opposite occurred making the problem larger and much worse than before. In the areas of health, education and housing, statistics on Newark are comparable to that of some developing countries.

Over the past two decades significant changes have been made to both the policy and physical construction of public housing. Today, affordable housing choices range from low-cost customized prefabricated homes to home-sharing strategies that ease the cost of living for multiple parties. Recent eminent domain practices by local officials have, however, exacerbated the problem of gentrification. One way this can be reduced would be to start applying a systems perspective to the housing problem, as was already done in

Hong Kong (Hu and Shen, 2000), and currently being practiced in London (Pickard, et. al, 2005). After understanding the city as a system (or organization), we can begin to visualize the “blade of grass” from many different angles – a world view understood by many artists of the late nineteenth century.

“And to get at that character, the fundamental truth of it: that’s three times now that I’ve painted the same spot...If we study Japanese art, we see a man who is undoubtably wise, philosophic and intelligent, who spends his time doing what? In studying the distance between the earth and the moon? No. In studying Bismark’s policy? No. He studies a single blade of grass. But this blade of grass leads him to draw every plant and then the seasons, the wide aspects of the countryside, then animals, then the human figure. So he passes his life, and life is too short to do the whole,” (Chipp, 1968).

– Vincent Van Gogh, Letter to Theo, September 1888.

What Van Gogh is describing here is an aesthetic ecology – an evolutionary way of seeing and thinking about the world and how those results are shown in traditional Japanese painting. If we treat affordable housing as the “blade of grass,” we should be able to study it from the angles of family, education, health, politics, and economics, drawing a clear picture of how the entire city of Newark operates. We can begin to visualize solutions to a problem by going outside of the problem and into the environment. For example, instead of building more affordable housing, perhaps funds should be directed at providing adult education to parents in affordable homes so that they may become empowered to renovate their own homes. The same can be done with any of the other sub-systems. Recently, the New York Times published an article describing New York City’s unorthodox move to providing housing subsidies to new, top-rate public school teachers, (Herszenhorn, 2006). A few in the health industry have begun using aesthetics more directly. In the same month, the Times also covered a story describing how three years ago, the Mount Sinai School of Medicine began requiring medical students to take courses in art-appreciation and the humanities. The purpose of these courses is to develop “heightened observational skills” in future medical practitioners so they can make a correct diagnosis, (Kennedy, 2006). Since medical practitioners deal with immediate life and death, it makes sense to train them to use more than their rational minds, but also their senses when making critical decisions. This can help prevent law-suits while creating an internal operating environment based on effective feedback between doctor and patient, and increased autonomy for medical practitioners themselves.

Buildings may not show their effects as immediately, but the long-term negative consequences of “not getting it right” can be devastating to a city, both physically and economically. Getting it right means that first, we view the city as a system whose interdependent parts must properly interact so the whole can function effectively. Second, we learn to communicate using our senses. This way each part can develop ecologically with respect to the needs of the larger environment.

The Abbott School Construction Program

The New Jersey Abbott Schools Program, an effort to improve the public education system throughout the state was recently halted by the governor's office. The legal mandate by the Supreme Court required the state to provide every child with a thorough and efficient education. This process began about ten years ago with the landmark ruling in the Abbott versus Burke case. The courts ruled that children in the state's urban district public schools were receiving an inadequate education and that this was unconstitutional. This was such an important decision that in 2002 the New York Times was quoted as saying that Abbott v. Burke "may be the most significant education case since the Supreme Court's desegregation ruling nearly 50 years ago." The state of New Jersey was required to provide better educational resources to its students, much of which involved the construction of new schools or upgrades to existing schools. The court then classified disadvantaged districts in greater need of educational reform as "Abbott districts."

Twenty-nine districts were found to meet the requirements to be designated as Abbott districts and the New Jersey School Construction Corporation (NJSCC) was formed to manage the design and construction of these schools. Later on three more district were added to the list bringing the total to thirty-one. The NJSCC was initially given six billion dollars to either renovate existing schools in poor condition or too build new schools where needed. By 2004, signs began to emerge that the organization was running out of funds to complete this task. About four billion dollars had been spent yet less than half of the projects, about three hundred in total, had been completed.

The following is an excerpt from a speech recently given by the current SCC Chairman, Barry Zubrow, summarizing mistakes the organization made since the inception of the program.

"ZUBROW ADDRESSES EDUCATION COMMUNITY

(March 3, 2006) – At the New Jersey Principals and Supervisors Association Annual Legislative Conference today, SCC Chairman Barry Zubrow addressed the 150 person crowd with remarks focused on school construction reforms. His prepared remarks can be viewed below."

"Looking back at the original funding for the Abbott districts, when \$6 billion was authorized, there was no realistic attempt to size the solution to the problem. Unrealistic estimates were used for what it would cost to construct or renovate facilities; legitimate, necessary and real costs—such as land acquisition, environmental remediation, relocation and swing space, design fees and other soft costs – were ignored..."

"When the program initially started to roll out in too slow and controlled a manner, decisions were made at the highest levels of government to mandate a dramatic speed up of the construction program. There was a desire to "get shovels into the ground." Without sufficient staff to manage the construction projects themselves, much of the responsibility was shifted to outside project management firms, but with ill-defined accountability, tracking and reporting. The result was much frenetic activity to acquire

land, get buildings designed, and to start construction. The only problem was that planning, prioritization and process controls seem to have been largely left out of the picture...

Reforms began to be put in place in July of last year....the practice of acquiring land for schools for which no funding was remotely possible was halted; a capital plan was developed to allocate the then remaining funding for schools projects; and design and other work on those projects which did not come within the capital plan was halted.”

NJSCC: System Failure and Aesthetic Dilemmas

The internal problems of the system were outlined by the chairman in this speech. However, the questions that still need to be addressed are how this happened in the first place and the larger social effects this crisis has had on the community, in other words how the system was affected *by* its environment and what affect it has had *on* the environment. Also, if we were to redesign the program from scratch, what symbols can we locate to create a new aesthetic experience?

A systems perspective tells us that the design of an organization without reference to its environment will only result in failure. Organizations in the Systems Age need to be environment-full, not environment-free, (Ackoff 1999, p.22). Since the NJSCC did not utilize this concept under the old management, among other problems, entire neighborhoods were cleared and long-time residents made to relocate for the benefit of the greater community. Today, some of these sites lie completely abandoned. In addition, no amount of money can make up for the strain this process has put on families and children, and the destruction of social ties and networks that have long held communities together.

Table 2. NJSCC Operating Environment							
Political		Economic		Social			Cultural
State	Local	Global	Local	Health	Education	Housing	Aesthetics / The Arts

In the political realm, national pressure did not exist because the state was the grantor of funds for school construction. State and local politics were at play. Strong competition for state funds were driven by the desire for re-election (or power) by district leaders. The governor did not have to compete for funds, however he did desire re-election. The problem created is what the chairman alluded to in his speech when he stated, “...decisions were made at the highest levels of government to mandate a dramatic speed up of the construction program. There was a desire to “get shovels into the ground.” The political dynamic was worse at the local level because of the sheer number of district leaders – thirty in total – versus one governor.

In the economic environment, global and local forces competed with each other (See Table 2). The price of construction materials such as steel is heavily dependent on global market. Fast industrializing countries like India and China continue to drive up prices so long as they have a demand for the material. This in turn put pressure on local businesses to order as much material early-on, before prices skyrocket to unbearable levels. There was also the factor of transporting building supplies to and from a site, which left local motorists vulnerable to fluctuations in the global oil market.

In the social environment, related systems like health and housing had much to do with how funds were allocated in the first place. Abbott districts were termed so because they were considered disadvantaged neighborhoods. Attempting to solve the problem of education in a disadvantaged neighborhood without addressing health and housing issues led to systemic failure. Since education funds historically were taken from property taxes, it would make sense that poor housing conditions would lead to poor school facilities. Perhaps school construction funds should have gone towards housing instead, and the increased taxes from better housing, towards the building of Abbott schools! Furthermore, students are required to attend schools in which they are zoned, therefore poorer students wind up learning with other poor students. Perhaps funds could have been allocated to families who have bright children, and used to send them to public schools in a wealthier district.

Ultimately, none of these suggestions could have been implemented in either environment because this was a school construction program. The emphasis is on construction, not on schooling. Also, we do not know what education really means as a society. If we expand our definition of education to *learning*, and if educational facilities become *learning environments*, we may find that large school facilities are not necessary at all for the improvement of learning. The aesthetic experience is a method for learning, one that may prove to be more fulfilling than the conventional classroom-teacher-student method. There were several symbols of learning in the New Jersey Abbott Program. The first is the textbook – the disseminator of ideas in the first place. Next is the teacher –the one who aids in turning those ideas into knowledge. Last but not least is the environment of both, which as Beuys teaches us, is just as important a factor in the equation. The new teacher-student learning environment should be decided by mutual agreement of both parties. This is the beginning of the aesthetic experience.

Dilemma #1: Materialism and Determinism– Buildings as Status Symbols – What we value?

In trying to improve the states education system, more importance was placed on school buildings as a status symbol for the local politician, than on the ideas generated within those buildings. Constructing new facilities is a waste of money if the teachers within the school continuously make comments that abuse and demoralize students. The causal notion that new school buildings will produce smarter students falls into the trap of architectural determinism that befell designers of affordable housing projects, who falsely believed that better designed homes would reduce crime in poorer, disadvantaged

neighborhoods. This is a dilemma in the question of what we value as human beings and as a community – fancy blinds or great minds?

Dilemma #2: Split between Art and Science – Mass-Production – How we work?

Dilemma #3: Changes in how we communicate – Internet – How we think?

To be continued...

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