

9-2. Describe some ways in which mechanization or technology transformed the body's occupation of space in modernity.

## **Time Transformed**

### **Ophelia Wilkins**

We have read and discussed in great detail many of the ways in which our physical environment has transformed due to the emergence of mechanization. However, mechanization introduced an equally radical transformation in the body's occupation of temporal space. By comparing the past, present and future – looking at moments in Gideon's *Mechanization Takes Command*\*, Beatriz Colomina's article "Unbreathed Air"\* about the Smithsons' House of the Future ('H.O.F.' as they call it), and our present circumstances – I will attempt to describe a number of the ways in which mechanization or new technologies have warped our perception of time.

An obsession with efficiency has resulted in the multiplication of time. Gideon relates how, in the early 1900's, factories became concerned with the efficiency of production. At this point, initially through the work of a steel foreman named Frederick Taylor, "The human body is studied to discover how far it can be transformed into a mechanism." (p. 98). Subsequently, psychologists Frank and Lillian Gilbreth adopt the same problem, performing efficiency studies without a stopwatch through "visual representation of the work process," (p. 100). "From the question: 'How long does it take to do a piece of work?' one came to a representation of the path and elements of a movement." (p. 101). In the case of bricklaying, their methods "almost [triple] a man's daily output." (p. 101).

The introduction of mechanization into the household created time which, according to the Smithsons, would primarily be leisure time. Gideon describes how "The small electric motor ... can be inconspicuously built in and moved wherever needed. ... It has meant to the mechanization of the household what the invention of the wheel meant to moving loads. It set everything rolling. ... As we have seen, the principles of the vacuum cleaner, of the dishwasher, of the washing machine, were discovered almost instantaneously. But their success and assimilation had to await the mechanical mover." (p. 556). One of the many implications of household mechanization was the creation of leisure time. According to Colomina, "The H.O.F. included all the latest electronic technologies available or imagined." (p. 43). "[It] assumed, as the Smithsons put it, a "leisure time" with both husband and wife at home." (p. 41). "The H.O.F. used the latest technologies and made housework disappear, transformed into a push-button game, a form of play." (p. 43). While household mechanization has certainly created time, the Smithsons got it all wrong, since we masochistically seem to fill our "leisure" time with more and more work.

The infiltration of environmental control systems – air conditioning, ventilation, etc. – annulls time. When Gideon published *Mechanization Takes Command* in 1948, air conditioning had not yet been invented (or at least had not yet been marketed and

proliferated). Yet in 1956, around the time when air conditioning did make its first appearances, the Smithsons designed their House of the Future to be an air-tight, mechanically ventilated and temperature controlled house. In the H.O.F. “There is no outside. The house is only an inside. The inside of an inside of an inside.” (p.47). “Those few who enter the house by passing into the air-lock in its hull are immediately subjected to a decontamination procedure that keeps the outside air out: “To admit the visitor the occupant operates the shutter control and automatically the anti-draught blast of warm air from the grille under the door comes into operation” ... The house is air-conditioned throughout, and all the smells are mechanically extracted.” (p. 50). This description sounds eerily like houses, dormitories and institutions of today. We notice in studio (or rather, do not notice), that the air and light are always the same. We never know what time it is, or how long we have been sitting in the exact same position performing exactly the same task because the sun does not rise or set over Studio 7.

What are the impacts of these changes? Why does it matter whether we measure time by the ebb and flow of the tides, by minutes and seconds, or some unpatterned sequence of collapsing and expanding temporal zones? My own interpretation is that mechanization has sparked a Darwinian instinct in humans to survive through environmental control. However, once we become the subjects of our own control, we’re undermining our instincts and subverting evolution.

\* Giedion, Siegfried, *Mechanization Takes Command*, Oxford University Press; New York, 1948.

\* Colomina, Beatriz, “Unbreathed Air”, Grey Room 15, Spring 2004, p. 28-59.

## **Catherine Fowlkes**

The mechanized condition of modernity resulted in a transference from the body negotiating its surroundings to the body negotiating technology that was created to negotiate its surroundings. This distance from the environment affected the body's occupation of it.

Two major tenets of mechanization had great spatial repercussions – continuous motion and division of labor. The notion of continuous motion, manifested in the conveyor belt, held supreme uninterrupted activity. The hoisting, lifting and transporting of goods could be aided and the delivery of items could be eased. The idea of division of labor divided production into discreet parts – each of which could be carried out by an individual.

Continuous motion and division of labor combined were first realized in the form of human production lines where men would work together without stopping to create a continuous action of labor. A well known example of this was the biscuit bakery of the British Navy.

“...The first, or the moulder, forms the biscuit two at a time, the second, or marker, stamps and throws them to the splitter, who separates the two pieces and puts them under the hand of the chucker, the man that supplies the oven, whose work of throwing the bread on the peel must be so exact that he cannot look off for a moment. The fifth, or the depositor, receives the biscuits on the peel and arranges them in the oven. The business is to deposit in the oven seventy biscuits in a minute and this is accomplished with the regularity of a clock...operating like the motion of a pendulum.” (Giedion, *Mechanization Takes Command*, p.88)

The human assembly line necessitated that each body was in continual motion without pause. Each motion was dictated by one's task – be it a marker or a chucker. This constant repetition of one movement was unyielding.

Since human assembly lines were working in tandem, time became a key focus. Time was crucial for both coordination between men and for overall speed (resulting in more production and thus more money). Space-time studies of Frank and Lillian Gilbreth examined efficiency of tasks and particular movements. Their studies noted the excessive and extraneous aspects of each. For example, after studying the minutia of bricklaying, they were able to suggest an adjustable scaffold for brick piling. “It did away with the workman's need to ‘bend over and raise the weight of his body a thousand times a day,’ thus almost tripling a man's daily output from 1000 to 2700 bricks.” (Giedion, p.101)

Not only did these studies and adjustments change the body's actions in space, but made the body more aware of their actions and the time it took to execute them, ultimately altering its experience. The limits of the body were tested – not in the traditional intuitive ways of how much one could lift, etc, but by how many times one could repeat a particular act – ideally the exact same way – the most efficient way – every time.

Inevitably, the machine advanced and easily overtook the body in its capabilities. Thus,

the body was relegated to the role of supervisor. The trajectory of the body's relationship to the machine, and thus to its environment can be seen as varying forms of control. Initially, tools were created to assist the body in its control of its surroundings, later, the methods of the machine influenced the way in which the body physically controlled its environment, and finally, the machine functioned without the physical input of the body but relied on its presence - creating a symbiotic relationship of control and need.

## **Katherine James response**

Humans are fascinated and frightened by their machines because the machines have been created in their image, or the negative space of their image, and thus threaten an organicism that challenges the sanctity, the uniqueness, of their creator. People make objects, performative or otherwise, in the lens of their understanding of the functions of the world; this understanding comes from the most primal, authentic source: the understanding of the way the human body exists in its context. The mimicry of the human form extends from our machines of daily activities to the architecture that houses them. Much more than objects that we are meant to interact with, machines share our DNA: they are born from humans and evolve through continued interaction with humans. The body shows up persistently as a metaphor or direct model in design: the body's proportion is found in the kitchen utensil, the movement of the hand mapped by the keyboard, the skin system referenced in architecture's exterior skins. Design is a response to aesthetic and functional truths originating with, and responding to, the body in space.

A system of response and counter response, something of a feedback loop, is then set up between the machine and its human inventor. The Frankenstein syndrome of a mechanical creation transcending its technological capacity and becoming human or superhuman (at once our fantasy and worst nightmare) plagues us. "The body, itself invaded and reshaped by technology, invades and permeates the space outside, even as this space takes on dimensions that themselves confuse the inner and the outer, visually, mentally, and physically" (Vidler, 161). The distance between human and mechanized object diminishes in the feedback loop as machines change the human form and humans in turn change their machines.

Gideon believes that: "Mechanization is thus construed as an outside force, responsible for the novel woes that plague mankind, and yet it is constructed in our image"(Braham, 209). So, while perhaps a machine age connotes alienation of the human soul within a cold, mechanized topography, what is alienating might actually be the closeness of machines to us-- the intensely intimate relationships we create with them-- rather than the negation of human intimacy that is the result of this new intimacy. Vidler points out an "overinvestment of 'sentiment' in objects, to the extent that 'the feeling for cause and effect falters'" (Vidler, 168). This is the challenge of living amongst, and so interchangeably with, our machines. We have close affairs with these objects, and have humanized them so much that we question which came first, which means more-- the human, or the technology created by the human? The void between these two entities shrinks in both the spatial and psychological realms as machines and their humans integrate, and this question becomes more and more difficult to qualify.

## **Jimmy Shen's response**

One of the effects of industrialization in relation to the body's occupation in space has to do with the modern obsession with the notion of cleanliness. As Vidler explains "if, for the first machine age the preferred metaphor for the house was industrial, a 'machine for living in,' the second machine age would perhaps privilege the medical: the house as once prosthesis and prophylactic."(p. 161) The house has become more than just a machine but an machine that is integral to the human body where there is a symbiotic relationship of care and protection.

While industrialization created an urban environment that did raise the quality of health it also created an exaggerated social preoccupation with cleanliness that could not be satisfied through physical means. This anxiety created an obsessive fetishization of the industrial product where symbolic meaning was attributed to these objects. Braham explains the "rules for cleanliness were previously the province of religious doctrine. They are now a medical issue, but they are still exercised in symbolic terms at the level of household activities, expressing and enforcing the social order."(p.217) It is a fixation on the image of the clean and its implications that shaped the domestic environment. Braham goes on to explain that "cleanliness is a construct that must be made visible to be effective."(210) It is our need to surround ourselves with these symbolic vessels that results in the modern domestic environment. Braham explains that "we are not governed by anxiety to escape disease, but are positively re-ordering our environment, making it conform to an idea."(p.217)

We can look at the mechanization of the domestic environment as one which not only was affected by the changing habits of society but one where the environment itself altered its relationship to the body. Vidler explains "the modernistic prosthetic object was equally a master: the etiquette machines fabricated by Schreber for children – to construct correct posture while lying, sitting, and standing – as well as the taylorized furniture of the Gilbreths were all so many devices to control the body for its own good."(p.170)

The white modern bathtub is one example of a product that can be examined as one of symbolic importance in relation to cleanliness. Beginning with the location of the bathtub, it is always placed in "an entirely private and specialized room bound to the bedroom" to hide the presence of nudity. One can also look to the material properties of the clean and smooth white tub where the reflectivity of the glazed surface of the tub gives the impression of unchanging cleanliness. Where the soling of the bathtub would really have little to no effect in terms of hygiene, it is the image of cleanliness that is important to people.

Anthony Vidler, Homes for Cyborgs, in Not at Home: The Suppression of Domesticity in Modern Art and Architecture. (London: Thames and Hudson, 1996)

William W. Braham, Siegfried Giedion and the Fascination of the Tub, in Plumbing. (New York: Princeton Architectural Press, 1997)

## **Body Talk**

### **James Smith**

Industrialization and the mechanization of technology, transformed the way the body positions itself in domestic culture. Where at once it was isolated and trapped the body is now free and mobile. The new technologies that resulted from Industrialization at the beginning of the 20th century were demanded by consumers. The home was the ideal palette of experimentation in the new technologies such as indoor plumbing and all-electric homes which resulted in new devices for the domestic consumer. New devices such as the electric vacuum cleaners, refrigerators, and toasters, to name a few, were designed to make life easier.

In comparison to the home the development and use of the automobile for the first half of the 20th century provided individualism and self reliance. “The car was a portable living room that promoted family togetherness; there was no need to share a compartment or a crowded streetcar with strangers if you had a home on wheels.” (Goldfield/Brownell 292) During the first two decades of the 20th century the automobiles popularity increased dramatically, however it was Henry Ford and the opening of his River Rouge Complex in 1919 that enabled the automobile to become a catalyst for change in society. Much like the automobile, standardization and mass production techniques found at the River Rouge Complex would affect the domestic sphere.

The standardization of the compact bathroom that Giedion discusses in the last chapter of his “Mechanization Takes Command” represents the influence of mass production techniques on physical space, in particular the standardization of the home. The Compact Bathroom represents only a partial testament to the overall effect that standardization will have on society’s physical characteristics, and the domestic sphere. Zoning practices, for example, became a form of standardization, segregating and classifying land use; commercial residential, single family housing, apartment housing etc. An Example of successful standardization and mass production techniques can be found in the design of the Frankfurt Kitchen by Margarete Schotte-Lihotzky. The Frankfurt Kitchen was designed in the 1920’s and resulted in 10000 units for the social housing project “Romerstadt” by the architect Ernst May. The kitchens were designed for cost and spatial efficiency and became a model for the modern kitchen.

The efficient planning that was the result of the standardization of the mechanical components of the home led to a decrease in overall building size and cost. Another result of the standardization of the home was an increase in overall flexibility of design and comfort brought about as a result of technological advances. Geidion does not see the standardization of the mechanical core of the building in relationship to the assembly line procedures developed by Henry Ford. However it is the principle of mechanization in the domestic sphere that Geidion believes, results in the flexibility of design and comfort. “The task of mechanization is not to deliver ready-made, stamped-out houses or mechanical cores, but flexible, standardized elements admitting of various constellations, so as to create better and more comfortable dwellings.” (Geidion 711)

Goldfield/Brownell "Urban America A History" Houghton Mifflin Custom Publishing,  
1990 pg 292

Giedion, Siegfried "Mechanization Takes Command" Oxford University press, 1948 pg  
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