Virtual Interview of Peter Galison, May 1995

As the very title of your recent conference "The Architecture of Science" (Harvard University, May 1994) makes clear, metaphor and analogy have played an important role in mediating the relationship between the two cultures of architecture and science. Historically, terms such as organicism, mechanism, classification, and evolution have been exploited in various contexts as both constituent and regulative frameworks. More recently, themes from molecular biology, epidemiology, high-energy physics, and especially artificial intelligence have gained currency. What is the future of metaphor and analogy in structuring this relationship.

One of the themes that emerged from "The Architecture of Science" conference was the deep concern that architects, architectural historians, architectural theorists, shared about the scientization of architecture. In very different ways, both Kenneth Frampton and Denise Scott Brown see—in the last forty years—wave after wave of attempts to make architecture into a science. Both Frampton and Scott believe that all these tidal surges—from Bauhaus to computer design—crashed at the door, doing more or less damage as they encountered the irreducibly craft nature of the discipline. Interestingly, both Alberto-Pérez Gomez and Adrian Forty emphasized that science and architecture were once (into the Renaissance) not even distinct endeavors. Working with that understanding, Forty rather intriguingly points out that mechanistic and biological metaphors could not function in architecture until the separation had taken place. So, for example, biological circulation was available in some sense since the work of William Harvey—but it was several hundred years before such images became part of architectural reasoning, and an ideal of the building professions. That it was chosen and remains central must furthermore (Forty argues) be attributed to certain ideological commitments: circulation emphasizes self-containment and independence from the outside; other metaphors (such as breathing) emphasize the interaction with the environment. I would emphasize that such metaphors carry enormous power—choosing self-containment over interaction brings certain considerations forward (self-regulation, aesthetic isolation) and others at the periphery (access, links with the wider environment).

How the new range of metaphors will function depends to a large extent on which features of these fields comes to be salient. Take artificial intelligence. If the focus narrows to the central cybernetic notion of self-regulation, the concept of architectural individualism (autonomy of building from their outside world) may continue to be chal- lenged and as such simply further articulate the notion of circula- tion that has marked modernism from the early twentieth century. Artificial intelligence is, however, a tremendously powerful complex structure from which metaphors may be drawn. Focusing on notions of flexible problem solution, for example, the de specification of a single form-function assumption, might well provide an opening to different ways of thinking about space, one more accommodation to the shifting shape of science (and other aspects of our contemporary culture). So I would say this: such the metaphorical fields of molecular biology, epidemiology, high-energy physics, and artificial intelligence to not work off a shift from mechanical reductionism of pumps, tubes, circulation, and static force equilibriurn.

Sociologists of science have emphasized the role of architecture in creating credible with cases of scientific endeavor, and by extension producing a public for science. A parallel claim has made that the social distinctions and competing interests written into the organization of space is reinscribed in the constitution of this public, be it actual or virtual. What do you see as the role of "places of knowledge production."
In your own work with Caroline Jones you have identified the “laboratory,” “studio,” and “factory” as sites of scientific and cultural production. Their affiliation raises specific questions regarding the shared experimental tradition of the artistic avant-garde and high-energy physics. The genealogy of the avant-garde and of experimental science has often been described in terms of the dynamic opposition between normal and critical practices, routine and alternative spaces. How can models such as “dispersion” be used to understand the by-definition self-transformative “place of experiment.”

One of the most interesting developments in recent history of science has been the attention paid to the locality of knowledge, and to the sites of knowledge production. This attention to context, to scientific work not as a “view from nowhere” but rather as knowledge that emerges within the constraints of time and place, using the resources available then and there. We now have work (by Crosbie Smith and Norton Wise, Energy and Empire) showing precisely how Lord Kelvin’s electrodynamics participated in the industrial culture of industrial England—how his theories of electricity were part and parcel of the specific needs and constraints of laying underwater telegraph cables, for example. We have studies of 17th century science that show how Boyle’s notion of witnessing, repeatable, phenomenological experimentation was part of a post-Restoration view of how disputes could be resolved whether in politics or natural philosophy (Steven Shapin and Simon Schaffer, Leviathan and the Air-Pump, Princeton, 1985). My own earlier work took up a variety of such themes, for example in showing how Einstein’s theory of magnetism and atomic structure emerged in part from his patent work on gyroscopes in the mid-1910s (in my How Experiments End, Chicago, 1987).

Place—the specific, local site—played an essential role in recent consideration of how science has evolved. In my recent work, I have been exploring very recent and very large-scale experimentation—experimentation on the scale of billions of dollars, such as that planned for the (now-defunct) Superconducting Supercollider. In these projects, the concept of “place” becomes ever more poorly defined. Particles collide in one place, data are then “generated” in a long sequence of computer-aided modifications over many different sites. These data are then fed out over the computer nets to tens, sometimes hundreds of institutions. In one SSC experiment there were to have been a thousand PhD physicists spread out over several continents. Even the control room of the accelerator was to have been multiplied many times, one in Japan, several in the United States, one in Europe, and perhaps even more. Consequently, I have argued, it becomes impossible to say “where” the “experiment” is—what does a “local” study of scientific production mean in such circumstances? (Image and Logic: The Material Culture of Modern Physics, forthcoming).

Carolyn Jones has similarly explored many attempts to remove a fixed conception of art (or more explicitly, modern art) from the studio (Machine in the Studio, forthcoming, Chicago). In a joint essay for the Architecture of Science volume, Jones and I proceed in three steps. First, we address the ideology of a genial artistic and scientific creator—the lone artist or experimenter whose public solitude (so to speak) is deemed necessary for the work of art or science to emerge. In art this conception of artistic creation had a recent heyday in the abstract expressionists’ studio; in the laboratory, the late nineteenth century could still make room for the Romantic scientist—Roentgen’s self-imposed secrecy and isolation was legendary. Second, World War II, we analyze the factory both as a model for and a reflection of the new mission-directed laboratory-factory (such as Los Alamos); to many artists—perhaps Andy Warhol foremost among them—the daylight factory alternately in play and in seriousness became a better, more “contemporary” mode of production than the garret. Finally, after the 1960s, new conceptions of production began to break away from the centered and centralized structures of factory, laboratory, and studio. Experimentation—through simulation and computer data-transfer began to displace itself, challenging the identity experimenter-laboratory-experiment; artists like Robert Smithson self-consciously violated the co-production of artist-studio-artwork. In such circumstances place, locality, and context begin to lose their analytic force.

No we come up to my present work. For these recent studies (of the SSC, for example) indicate that context—an enveloping and explanatory “surround”—is not a trans temporally useful category. Let me put it differently. I am an advisory editor of a journal I like very much called Science in Context. The name itself suggests a picture of science modeled like a thought experiment from classical thermodynamics: a small vessel (science) coming to equilibrium in a much larger heat bath (social context). But is this picture useful in which the science is no longer “small” compared with whatever it is that purportedly surrounds it? What conceivable exterior could be posited as the context of the computer in the twilight years of this century? When Margaret Saldie begins to use the SSC as a model for urban design which way does the explanatory causal arrow go? Looked at this way, context is not a universal explanation of science, but a historically-specific configuration of science and society in a particular epoch, say from the mid-16th century to the mid-20th century.

This is, then, one the quasi-paradoxical conclusions of Image and Logic: by tracking the context of the laboratory we come, in the end, to a dismantling of the historiographic category of contextualization itself.

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