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ABSTRACT

A spatial view of technology involves the relationships in space between technologies, placing significance on the actual dispersion of technology and relations of dependence and support between any particular technology and various social, chemical and biological dimensions. This paper seeks to elaborate a view of technology that is primarily spatially based. It incorporates the writings of Gilles Deleuze and Felix Guattari, as well as the actor-network perspective advocated by Bruno Latour, Michel Callon, John Law, Andrew Pickering and other sociologists of science. (Contains 6 references.) (JLB)

Towards a Spatial View:
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Towards a Spatial View: Deleuze and Guattari on Technology

It is often assumed that technology, especially communication and information technology, is concerned primarily with the manipulation of time (Condensing time, saving time, existing in time, etc.). Though such a view allows us to examine some of the functions and effects of technology, especially as it pertains to labor, it does not bring to light the concrete network of support implicit in any technology. A spatial view of technology involves the relationships in space between technologies, placing significance on the actual dispersion of technology and relations of dependence and support between any particular technology and various social, chemical and biological dimensions.

This paper seeks to elaborate a view of technology that is primarily spatially based. It incorporates the writings of Giiles Deleuze and Felix Guattari as well as the actor-network perspective advocated by Bruno Latour, Michel Callon, John Law, Andrew Pickering and other sociologists of science.

I.

I wish to begin with the example of the railway timetable. The purpose and function of this technology is obviously the manipulation of time, and it has effects in time. Standardized time zones were the result of this technology. However, I would argue that this technology, rather than being the temporal manipulation of trains, actually concerns the distribution of trains in space. The schedule appears to concern time only when viewed from the perspective of one of the train platforms (trains appear at set intervals, and then disappear). With regards to the network as a whole, the schedule distributes the trains so that no two machines occupy the same place (an event which is otherwise known as a train crash). But trains are not static; they move about the tracks. Rather than seeing this as movement in time, I would argue that on the network each train has a vector (force and direction, speed and acceleration).

But vectors refer to much more than physical movement. There are vectors within each train itself. Each technology is not a uniform whole but an assemblage: it is the wheel and the track, the engine and the fuel, the driver and the engineer, all of which interact. A technology such as the train is an heterogeneous assemblage of articulated actors (the pieces are articulated together, but not in any necessary way). It is heterogeneous in that it includes a variety of elements: human, mechanic, chemical (fuel), but also molecular (alloys), and formal. The study of technology, then, becomes the mapping of these vectors.[1]

We can see from the example of the train that this is a different way of viewing technology. Deleuze and Guattari argue that technology is not simply, as they put it, "the hand and tools" but "a technical social machine that pre-exists them and constitutes states of force or formation of power" (1987: 63). When we discuss technology, we are not simply discussing artifacts in space, but fields of force, spaces of influence. But before I get to Deleuze and Guattari I want to expand a bit on the earlier notion of technological assemblage especially in relation to a network of technologies.

Bruno Latour and others approach technology as a network of social actors (hence the name, Actor-Network perspective). They focus primarily on the social relations of technology. They view any technology as being as much of a social actor as a human. An actor is defined as "any element which bends space around itself, makes other elements dependent on itself and translates their will into a language of its own" (Latour and Callon, 1981: 286). How does a technology "bend space around itself?" Latour uses the example of an automatic door-closer (1988) which regulates human traffic patterns, allows only some sorts of access, &c. Technologies "impinge"

[1]I use "map" here in a Deleuzian sense. A map is rhizomatic, it follows connections every which way. A map is opposed to a tracing, which is regulated, selective, and what they refer to as "arborescent." See A Thousand Plateaus, 1987.

in this way on human behavior.[2] Latour says that they "prescribe certain behaviors (as simple as opening a door a certain way, or as complex as using a computer keyboard, or even cradling a phone on your shoulder).

But we cannot discuss technologies in isolation. As Michel Callon argues: "The actor-network is reducible neither to an actor nor a network. Like networks it is composed of a series of heterogeneous elements, animate and inanimate, that have been linked to one another . . . the entities it is composed of, whether natural or social, could at any moment redefine their identity and mutual relationships in some now way and bring new elements into the network" (1987: 93). Networks act by enlisting and translating other artifacts, other actors, into the network. Think of a corporation as an actor-network. Then imagine the recent merger between Bell Atlantic and Tele-Communications, Inc. A network enlists another network or conglomeration of actors and artifacts into its own network for its own uses and needs. These actors and artifacts will have to be "translated" to some extent so that they fit into the new network (i.e., cable transmissions have to be translated to be carried on fiber optic lines).

The actor-network perspective stresses both the contingency of networks (i.e., they are not determined, permanent, or universal) and their emergent qualities. These networks are rarely stable for long, but are continually bringing in new elements and changing the relationships between the actors.

II.

Temporal views of technology present us with genealogical models which argue that technology is what it is because if its history. However, history is embodied and embedded in relations of space (and relations in the network). But if a technology is not the result of its history, per se, then what is it?

[2]Note that this is not arguing that technologies determine social or behavioral relations, rather merely that they have some influence. Cf. Andrew Ross' statement that technology is "part of a persistent, and often coercive, dialogue about our manners" (1991: 3).

Deleuze and Guattari argue that what makes humans human is a particular articulation of technology and language. Technology acts as Content to Language's Expression (Content and Expression are used in a Hjelmslevian not Saussurian sense). My concern in this paper is not with the relations of Language and Technology (that is another paper entirely), but merely with the Technology part of the relation. The human strata, as they call it, is composed by a double articulation. The first articulation is the Content to the Expression (Technology to Language), and the second is the articulation of form to substance within both Content and Expression. Therefore, technology is composed of the articulation of a particular form to a particular substance.

Any technology has both form and substance; substances concern territories, forms concern structures of codes. Substance is an aggregate of molecular compounds; form is how they are arranged. Substance is an aggregate of silicon, gold, coppers, &c.; form is the computer microchip. Forms are organized (coded) by what Deleuze and Guattari call a differentiating machine. The differentiating machine is an abstract logic that arranges the aggregate of substances or artifacts according to its function. For example, the differentiating machine arranges types of trains (passenger or cargo) across the network. It grids or structures the network, establishing relations of difference and negativity.

Now, technology, as you remember, is a plane of content, and as such it can also act as a plane of expression to another plane of content, and so on. For example, the computer microchip is content to a certain expression (program speed, memory space), but at the same time the microchip is the expression of another content (material elements such as silicon, and/or social elements such as military and industrial needs), and so on. In this way, any technology is necessarily part of a system of technologies, a system with both technical and human actors. A technology services or supports other technologies and is similarly serviced and supported. One could map the chain of these articulations not only through the technological strata but also to

chemical and biological ones as well, where forms are determined by, for example, genetic codes or the possibilities for chemical articulation (what molecules bond in what way with what other molecules, &c.).

The point I want to make here is that the forms and potentials a technology takes and has are multiply determined by such diverse factors as molecular compounds, social needs, and of course, other technologies. For example, the form (size, configuration) of a computer microchip depends upon several things. On the one hand, the properties of the molecular substance involved (i.e., silicon) limit or allow electrical resistance to a certain extent (which makes silicon appropriate for this function), and also allow miniaturization to a certain extent (it can be sliced into very small, very thin pieces which still retain desirable qualities -- not too soft or brittle). On the other hand, manufacturing and other support technologies also constrain the form to a certain range of acceptable forms: the silicon can only be made so pure, sliced so thin, &c.

The form of a technology will have resonance with similar forms of other technologies and technological systems. For example, the form of any particular microchip will have resonance with other microchips as well as circuit boards, logic diagrams, &c. Also the form of a technology will be in accord with the forms of the technologies it supports (i.e., the computer into which the chip is placed). There are no singular forms, only multiplicities. For example, there is not form or feature of a car that is not isomorphic with other technologies. There is not technology that is unique. At best a technology can articulate an aggregate of disparate forms (cars that fly or are amphibious). Such technologies establish formal resonances between different strata (cars and boats, cars and airplanes) and articulate them together. But their forms are still resonant with other forms (airplanes or boats) and the coding and territorialization (to an extent) of those forms.

So, to oppose the temporal, genealogical view mentioned earlier, a technology is what it is because formal resonances are established between other technologies,

technical systems, strata (biological or chemical), or social, political, conceptual or other needs or structures. According to Wolfgang Schivelbusch (1986), in the early 1800s the first class railway passenger cars were modeled closely after traditional coaches, whereas the third class cars more closely resembled open wagons or carts. Was this because they "evolved" somehow from coaches and carts? Rather the first class carriages were the result of the coach being brought into a formal resonance with the constraints of the rails, as well as the need to comfort and familiarize rail travel for the bourgeoisie. The third class carriage was then the result of both economic necessity and the lack of a need to articulate their travel with types of travel they experienced previously. In America the railway car evolved differently. The form of the train was not brought into resonance with that of the coach or carriage but rather with the riverboat or steamship. American carriages tended to be longer and more open than the compartmentalized European train. There is no necessary evolution between coach and train or steamship and train, rather it is the matter or the articulation of forms -- what I am calling formal resonance.

A spatial view of technology, then, argues that a technology is an aggregate of disparate substances, shaped by blocks of resonance which are the mutual becomings of disparate forms, distributed by particular abstract logics, and articulated to an equally complex and varied plane of Language. Technologies are social actors which interact in networks of power relations which produce, repair, and maintain social space.

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