

Teaching with and Thinking After Illich on Tools

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For a few years in the 1990s at Pennsylvania State University I was privileged to collaborate with Ivan Illich in teaching, under the auspices of the Science, Technology, and Society Program, a fall semester graduate seminar, the first iteration of which was titled “History and Philosophy of Tools.” The idea for this seminar grew out of conversations that began in the late 1980s and which included visits to Cuernavaca. The course description read as follows:

Despite the modern definition of the human as a ‘tool using animal’ and the common belief in the ubiquitousness of tools among all peoples and at all ages in history, there exists no systematic study of the genesis of the concept of the tool and its cultural-philosophical implications. This course will explore the idea of the tool in relation to those of *organon*, *instrumentum*, machine, technique, technics, technology, etc. The thesis is that the modern concept of the tool arose in the 12th century and has been one of the foundations for the distinctly modern way of life.

There were three required texts: my co-edited collection *Philosophy and Technology* (1972), which includes some philosophical reflections on tools and use by such figures as diverse as Mario Bunge, Lewis Mumford, Günther Anders, Emmanuel Mesthene, Yves Simon, George Grant, and Hans Jonas; Illich’s *Tools for Conviviality* (1973); and Don Ihde’s *Technics and Praxis* (1979).

In preparing for the course, Illich and I consulted a considerable body of literature. As anyone who knows Illich would expect, we began with the *Oxford English Dictionary* entries on “tool” and “instrument,” work by Aristotle, Vitruvius, Hugh of St. Victor, Karl Marx, Ernst Kapp, and André Leroi-Gourhan (along with other archeological studies), the mechanology in

Jacques Lafitte's *Reflexions sur machines* (1934), Lewis Mumford's *Technics and Civilization* (1934), Norbert Wiener's *Cybernetics* (1948), Martin Heidegger's "Die Frage nach der Technik" (1954), and Gilbert Simondon's *Du Mode D'existence des Objets Techniques* (1958). Two items that Illich called especially to my attention were Hans Blumenberg's *Lebenswelt und Technisierung unter Aspekten der Phänomenologie* (1963) and the journal *RES: Anthropology and Aesthetics*, which began publication in 1981 under the sponsorship of the Peabody Museum of Archaeology and Ethnology at Harvard.

The Fall 1990 seminar itself began before Illich joined the class, since he did not arrive at Penn State until a few weeks into the semester. Amazingly, only three students enrolled. Prior to Illich's arrival, I sketched a brief history of thinking about tools that reflected my previous discussions with him and argued the need for a phenomenology of tools that would attempt to escape from abstractions and return to the things themselves. The seminar began by reading the opening chapter of *Tools* on "Two Watersheds" along with some selections from the *Philosophy and Technology* collection, the aim of which was to place on the table for consideration:

- the classical philosophical distinctions between doing and making (*praxis* and *poiesis* in Aristotle) as well as between labor, work, and action (from Hannah Arendt);
- modern economic distinctions between making/consuming and use/market value in artifacts (as in Karl Marx);
- a spectrum of things made from utensils, structures, apparatus, and utilities to tools, machines, and automotons;
- the engineering concepts of effectiveness and efficiency;
- sociological conceptions of social institutions as tools; and
- anthropological arguments about humans as tool makers and users (from Benjamin Franklin and Marx to Arnold Gehlen).

Once Illich joined us, we continued to examine and reflect on these and related ideas as we read and discussed Don Ihde's phenomenological analysis of the human-technology-world interaction in terms of embodiment, hermeneutic, and background relationships. Ihde's basic argument is that the technological instrumentation of perception transforms human experience with an amplification-reduction structure.

Instruments always amplify some aspect of human experience while reducing others. One simple example is the dental pick, which can detect otherwise imperceptible flaws on the surface of a tooth but no longer experience the tooth as small, bitingly sharp on one surface and rounded on another, as a wet, tartar-stained, often slightly smelly entity. Another is the telephone, which greatly extends the distance over which humans can interact while reducing the expressive richness of eyes, lips, and hands to disembodied speech deprived of its full sensory context.

In my mind, Ihde's phenomenology of instrumentally mediated experience was related to another topic that Illich was beginning to address during this period: the historicity of the senses. Along with the seminar on tools, Illich was offered a series of lectures at Penn State and the Traditional Acupuncture Institute in Columbia, Maryland, on the historical transformations of the senses, both outer and inner. I seem to remember one weekend gathering in Maryland reflecting on the notion of the sacred heart as an experience that was enriched with *pneuma* and *qi* rather than attenuated to the pumping of blood.

Contrary to my expectations, Illich did not find Ihde particularly useful. Rather than a phenomenological analysis of the ways in which the instrumentation of the senses transformed perception, Illich pursued something more like thick descriptions drawing on medical anthropology, cultural history, and poetry. For Illich, Don Gifford's *The Farther Shore: A Natural History of Perception, 1798-1984*, which would appear in paperback in 1991, was much

more insightful. Unlike Ihde, Gifford interprets perception in a historical and cultural context, not just one of scientific knowledge production.

Our initial 1990 foray into the history and philosophy of tools was followed in subsequent years by seminars attempting to deal with the same topic under different titles. In 1991 and 1992 it was “Philosophy of Artifacts” and in 1993 “History and Philosophy of Artifacts.”

Then in October of 1993 the seminar was supplemented with a three-day workshop — what Illich liked to call a living room conversation — titled “Things Have Consequences.” Participating were not only Illich’s close colleagues Barbara Duden and Lee Hoinacki but Hans Achterhuis (University of Twente, Netherlands), Albert Borgmann (University of Montana), Richard Buchanan (Carnegie-Mellon University), Eric Higgs (University of Alberta), and Eduardo Sabrovsky (Santiago, Chile), as well as other associates and students from Germany.

The gathering was structured by a series of roughly two-hour sessions that would open with a presentation on the theme by a participant, to be enlivened by extended discussion among all those present. Then a break for tea and pasta, followed with another two-hour session, with the day modulated across four or five sessions. In an article on the “Things Have Consequences” conversation, a reporter for the house magazine *Research Penn State* (September 1994), highlighted two themes: “The ability of our instruments to call up phenomena too large to be encompassed, has changed the universe in which we, with our machine-assisted and machine-altered senses, live.” “We cannot depend on good intentions: The things we bring into existence bring with them their own consequences.”

I had organized the conversation in order to bring together two people who greatly influenced me because of the ways they were developing (I thought) complementary insights

about the emergence of the techno-lifeworld and its challenges. Albert Borgmann's *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (1984) initiated what I still consider one of the broadest and deepest American reflections on technology. Borgmann emphasized how modern technology was infusing material culture with devices that occluded increasingly refined mechanisms while delivering ever more glamorous but shallow commodities; in response, he argued for efforts to recover and cultivate a life of focal things and practices. Borgmann's analysis and argument struck me as related to Illich's critique of counter-productivity and shadow work in the name of conviviality. Both were seeking ways to lead a meaningful life in the midst of a world historical transformation. Although Illich and Borgmann acknowledged each others' work, they did not hit it off as I had hoped. I had wanted my two friends to become friends — but largely failed in trying to midwife this conviviality.

As the Penn State Research reporter summarized the closing session,

Albert Borgmann was quietly earnest. He wanted participants to be effective.... Talk is good, but acts are needed. The tangible is required. Recognize what we and others have in common. Technology is desired; we must admit that when we point out and attempt to curb its dangers. We must make common cause with those outside the academic world.

By contrast, "Ivan Illich compared himself to Cicero, who fought in vain to preserve the Roman Republic. [Considering] himself a member of the Ancient Regime [and] an anarchist, [Illich argued] that mankind, freed of society's artifices and coercions, would be at its best. [In contrast to a presentation by Richard Buchanan, director of design studies at Carnegie-Mellon, Illich maintained that humans] should not attempt to manage or design the world."

The contrast with Buchanan was apt. Buchanan was not only director of one of the premier design studies programs and founding editor of the journal *Design Studies*, but was a colleague of Herbert Simon, who argued (in *The Sciences of the Artificial*, first published in

1969) for a general theory of design. At the same time, Buchanan was critical of some aspects of design hubris, and at Illich's death invited me to contribute an homage to Illich and his criticism of design and the designed life. As noted there, Illich and I explored the possibility of a piece with a sometimes working title of "Anti-Design: Notes for a Manifesto on Modern and Postmodern Artifice." The first paragraph of one version (Fall 1994) of this incomplete project read as follows:

Contra the widely promoted belief that design is something all human beings do and have done throughout history, but now must do more consciously and thoroughly than ever before, design is something that has had a history. Its beginnings can be traced to the rise of modernity, and it will almost certainly come to an end with the modern project. Indeed, we have an obligation not so much to promote designing as to learn to live without it, to resist its seductions, and to turn away from its pervasive and corrupting influence.

As imagined, the argument was to be two-fold: (1) design (especially engineering, but also architectural design) was not capable of achieving what it promises in the way of expanded control and the well-managed reduction of unintended consequences; and (2) even insofar as it did achieve such goals, design as practiced by experts and professionals ultimately dehumanizes the world. The aim was to reanimate the moral criticism of designing as a lack of proportionality in ambition and contrivance. One modest result of this aborted effort was a two-week seminar in the Architecture Department (Fall 1995), conducted by Illich and Jean Robert. Illich had been teaching a seminar at the University of Pennsylvania in the Graduate Program in Architecture, directed by Joseph Rykwert, whose *The Idea of a Town: The Anthropology of Urban Form in Rome, Italy and the Ancient World* (1976) gave respect to the intuitive, vernacular, premodern traditions of city construction. The Illich-Robert seminar provided a critical review of developments in design that tended to turn place and landscape into managed space, depriving

people of both roots and autonomy. What Illich had once heard Jacques Maritain say of planning, “*C'est une nouvelle espece du peche de presumption,*” Illich applied to design.

For Illich, the alternative is design in a fundamentally different sense, one that did not presume to social control and individualistic self-realization, but instead sought to promote social solidarity, living in harmony with greater orders, and dwelling. Too often design treats the world as an enemy rather than a friend, and calls in experts to manipulate and manage. What Illich imagined was a design based on friendship, mutual give and take, respect for the world, and ultimately suffering, in the positive sense of creatively accepting and affirming limitations.

Over the course of the previous few years Illich had come increasingly to see the need for some kind of *askesis* in the presence of a world dominated by tools, instruments, and artifacts, and so for the year 1994 our seminar was titled “History and Philosophy of *Askesis*.” (Actually, because of a university administrator’s objection, the Greek “*askesis*” was replaced in the official listing with “asceticism.”) The idea was to consider ways in which the ascetic practices enjoined by Plato, Aristotle, Evagrius, Cassian, St. Augustine, St. Benedict, Ignatius of Loyola, and others — including Robert Merton’s analysis of asceticism in the practice of modern science (although Merton did not call it that) — might serve some kind of guidance for cultivating detachment from modern tools and artifacts.

Thinking after Illich

I have briefly narrated this experience of teaching with Illich — in the process admitting my own repeated failures to appreciate the lineaments of his deep archeology — because it would seem to fit with his own approach to tools and instruments. Illich always emphasized his vocation as a historian and how the concept of tools or instruments itself had a history that called

for recognition if we are to live with awareness in the historical dispensation that is our modern destiny in the West. But parallel with the notion that the concept of *instrumentum* has a history is the fact that the thinking of the historicity of tools also has a personal history in the intellectual life of Illich. My narrative is an admittedly superficial effort to recall a little of that second-order history.

Against that background, let me now share something more about what I learned through those years of teaching with Illich — with some notes for a critical history of the idea of tool or *instrumentum*. (Here again I draw on a previous effort, this time from 2007, to think after Illich.)

In Martin Heidegger's most well-known philosophy and technology text, "Die Frage nach der Technik," he begins by noting how technology is a complex activity, object, and volition that is commonly thought together under the combined categories of means and human activity. To this Heidegger gives a Latin term and presents the German Technik (commonly but inadequately translated with "technology") as *instrumentum*. (The historical contingencies that produced the *Technik* to "technology" translation are explored at length by Eric Schatzberg.)

Heidegger appears both to accept and to oppose this "instrumental or anthropological definition." After affirming its correctness, for instance, he asserts that this "correct instrumental definition" fails to recognize the essence of technology. In response, he argues an alternative presentation of technology as a kind of *ἀλήθεια*, truth understood as disclosure or revelation. This alternative presentation is developed through a typically Heideggerian maneuver that interrogates instrumentality by turning to a reflection on Aristotle's four causes. For Heidegger, the rethinking of instrumentality in terms of causality appears non-problematic. That is, Heidegger fails to acknowledge how *causa instrumentalis* — as distinct from *causa materialis*,

causa formalis, *causa finalis*, and *causa efficiens* — has its own special history, a history distinct from that of the other causes and one that only came to fruition long after Aristotle.

The Greek equivalent of *instrumentum* is generally taken to be *ὄργανον* or *organon*. We should nevertheless be uncomfortable about any easy translation, since the classical Greek word can refer to both an organ of the body as well as an artifact grasped and used as an implement or tool. Indeed, the Greek *organon* is a root of the English “organic” and “organism,” not to mention a musical instrument of some mechanical complexity.

The closest Aristotle came to putting forth an idea related to what will come to be called the *causa instrumentalis* occurs immediately after he distinguished the four causes of coming to be. Alongside these, he writes, are the “intermediary becomings” in which, for instance, a physician causes health by use of some *erga* or *organa*, therapeutic procedures or drugs (*Physics* II, 3; 194b35-195a3). These procedures and drugs are not properly subsumed within any of the other four causes, but are intermediaries between the efficient cause of the physician, the final cause of health, the material cause of the flesh, and the formal cause of the soul. Earlier Greek references to intermediary causation occur at a number of points in Plato. In the *Phaedo* (99a ff.)

Socrates criticizes the idea of the body as primary cause. Later in the *Statesman* (281d ff.) there is a distinction between *αἰτίαι* (causes) and *ζῦναίτια* (collaborative causes). Finally, in the *Timaeus*, near the end of a discourse on the works of reason that constitute the coming to be of the human soul and body, the speaker identifies what he calls “secondary causes which the god uses as subservient in order to achieve the best that is possible” (36d).

In this capacity as a means by which the divine relates to the world, *causa instrumentalis* comes increasingly to prominence in Jewish, Islamic, and Christian theology as a distinct species of causation. As Harry Austryn Wolfson analyzes the history of this idea in his great study, *Philo*

(1947), instrumental causality becomes a way to preserve God as fully transcendent or separated from the world and its creator. God works through secondary or instrumental causes. He only touches the creation with the proverbial ten foot pole of angels and other intermediaries. This Hellenistic Jewish idea of secondary or instrumental causation is picked up and elaborated in the Islamic theology of al-Kindi (9th century CE), Ibn Sina (or Avicenna, late 10th and early 11th centuries), and Ibn Rushd (or Averroes, 12th century). In each of these instances the aim is to defend the absolute transcendence of divine power and allow for the complexities of physical and biological causation.

In scholastic Christian theology, instrumental causality is prominent in at least two different kinds of relationships. One was between ministers and the sacraments they perform, another between angels and the heavenly spheres of the planets that they move. For present purposes, consider only the case of the sacraments. In the *Summa theologiae* (III, question 62, article 1), Thomas Aquinas asks in what way the sacraments are causes of grace. According to the common objections, the sacraments are not a cause but simply a sign of grace. According to Thomas, however, following the teaching of Augustine, when baptismal water touches the body it brings about a cleansing of the heart. And since the heart is not cleansed except by grace, the sacrament of baptism (and *eo ipso* the other sacraments) must cause grace.

To explain how this is possible Thomas develops the notion of the *causa instrumentalis* as a special kind of *causa efficiens*. *Causa efficiens* or *causa agens* can be either what he calls “principal” or “instrumental.” “The principal cause produces its effect in virtue of its form, to which that effect is assimilated, as fire warms in virtue of its own heat.” The instrumental cause, by contrast,

acts not in virtue of its own form, but solely in virtue of the motion by which the principal agent moves it. Hence the effect has a likeness not to the instrument, but rather

to that principal agent: as a bed does not resemble the axe which carves it but rather the art in the mind of the artificer.

The instrumental cause is, as it were, neutral. It takes on the intentions and actions of its prime user who is, it is crucial to note, not the minister or priest but God who uses them and the priest to administer the sacraments.

This is a remarkable argument, one that foreshadows a uniquely modern notion of technology. One implication is that the ministers of the Church can validly confer the sacraments independently of their own moral state or character, thus radically dis-embedding the sacramental activity from the personal spiritual life. Does this theological idea of the tool as a neutral instrument through which a transcendent God acts into the world not foreshadow a modern faith in technologies as neutral instruments through which will flow without distortion the intentions imparted to them by their human makers and users?

The technological faith becomes one that rejects any principal-agent problem as described, for example, in G.W.F. Hegel's analysis of the master-slave dialectic in which the master becomes the slave of the slave. The theology of instrumental causation conceives the instrumental or immediate causal agent as wholly transparent to the intentions of a principal. What Bruno Latour calls "translation" does not occur. When Edward Teller proposed using hydrogen bombs to do geological engineering, was he not only thinking of himself as god-like but also the nuclear devices as pure means that would not in any way introduce a reality of their own into the harbors and canals he wished to blast open? Having initially challenged this technological faith with the notion of counterproductivity, Illich subsequently reaches into history to explore why we moderns are so resistant to recognizing that technologies have consequences. The notion of disembedding here draws on that of the economic historian Karl

Polanyi, who describes traditional economic activities as deeply embedded in a contextualizing, cultural manifold. The modern economy is distinguished precisely by being disembedded from religious customs, political and social orders, aesthetic aspirations, and other aspects of culture. In a like manner, the scholastic Christian theology of the causal character of the sacraments disembeds them from a larger socio-moral nexus and turns the sacraments into what will later be called a “resource.”

It is against the background of this matrix of ideas that there emerges the idea of technology as neutral instrumental cause or tool. Foreshadowing the way nature is turned into a resource by modern science and technology, and the ways men and women have become human resources for corporations and governments, the sacraments were given the status of spiritual resources within the Christian community. What for Heidegger is the distinctive truth of modern technology — its making available of energy and materials for human manipulation — is adumbrated in the scholastic making available of grace. In the summary judgment of Illich, *Corruptio optimi quae est pessima*, the corruption of the best is the worst.

This briefly sketched and quite partial history of the idea of instrumentality suggests that despite the overwhelming and dominant contemporary assumption, tools, tool-using and making are not ahistorical features of being human. As the cultural critic Lewis Mumford has maintained, in an argument deepened by the cultural anthropologist Tim Ingold, the idea of tool using as coeval with humanity depends on an anthropological anachronism that would read back into the prehistorical record our own experiential fascination with and ways of relating to technology.

What Follows?

What follows from such a historical analysis of instrumentality? For Illich himself the historicity of tools and technology in the West is prolegomenon to a deeper understanding of the world in which we live, to living with greater awareness of who and what we are. My own work in this regard has become an effort to understand the historicity of a special form of tool making and using known as engineering. Engineering and the engineered way of being in the world have become ways of life that affect non-engineers and engineers alike. But like tools and systems, engineering has a history. My effort is to disinter this history from the common assumption that engineering is coeval with the emergence of human history, that the builders of the pyramids, for instance, were engineers.

One element has been to try to look at engineering not only from its history in the West but to consider in a critical manner what western engineers often call engineering in non-western contexts. Egyptian engineering is not engineering. Even more is it the case that classical Chinese engineering (the Great Wall, the Grand Canal) is not engineering. To understand engineering today we need to try to step not only back into western history but outside of a western cultural context.

Illich repeatedly struggled to appreciate his and our destiny as heirs of the West, of what he sometimes called the Mediterranean world. This pursuit of a historical archeology of the West, which aspired to understand the present in the mirror of our past, was complemented by efforts to understand our western destiny in the mirror of another, of the distant. Illich made more than one trip to India and to Japan, and once mentioned how he had imagined writing a history of the West in Chinese, but quickly realized that such a project was beyond him. Although it would be foolish for me to ever imagine something so bold, yet my own personal

destiny has brought me into contact with China, during my own 1990s collaboration with Illich, in ways for which I can only be grateful.

The most common way to compare China and the West is to take western culture as normative and to describe China as lacking certain of its key features. As a heuristic exercise, however, a normative reversal can describe the West in terms of what it lacks with regard to common features of the Chinese tradition. Working with colleagues in China, a preliminary inventory for such a normative reversal can venture the following observations. First, Western ethics is weak in appreciating the ways humans are embedded in family relationships; from the Greeks on, the West takes market individualism as a model for human interactions. Second, western philosophy lacks the continuities, historical and ontological, characteristic of Chinese philosophy; the West is full of breaks and oppositions, as in those between Greek and Christian philosophies and between (natural) earth and (transcendent) heaven. Third, the West lacks the ideals of harmony and complementarity that are fundamental to Chinese philosophy. Instead of the acceptance of differences, in which a person can be both mind and body or Confucian, Daoist, and Buddhist all at the same time; in the West people struggle with the mind-body problem and feel compelled to declare themselves as Jews, Christians, Muslims, or none of the above.

After more than a century of efforts to assimilate western science and technology there are also Chinese thinkers seeking to recover and re-appreciate the thought traditions of China. Here I will mention the work of only three figures whom, it appears to me, deserve attention from any of us sympathetic to Illich's questions: Mou Zongsan, Li Zehou, and Yuk Hui.

Mou Zongsan, the elder of the three, lived through a century of Chinese strife and disorder. Within this maelstrom, he synthesized what has been called New Confucianism, Neo-

Daoism, and Tiantai Buddhist philosophy, to advance a critical assessment of the philosophy of Kant and a reappraisal of Chinese traditions. As he said in the first of a series of 19 lectures from 1978, “Today, facing a world overwhelmed by technology, people have no appreciation for the beauty of Heaven and Earth.” In counterpoint, as he says later in the same lecture, “Chinese philosophy, as it developed [in its particularity], has life as its main subject and constitutes what I call ‘the learning of life’.” What Mou designates as the learning of life surely exhibits resonances with Illich’s notion of conviviality.

Li Zehou is even more emphatic in articulating the uniqueness of a Confucian culture that grew out of shamanistic ritual and dance into a life-affirming, this-worldly aesthetic tradition. As he describes it in *The Chinese Aesthetic Tradition*, this way of life “is neither religious ecstasy nor secular happiness, but a self-forgetful, nonconceptual, ‘perfect’ or ‘heavenly’ joy that transcends gain or loss, and in which one experiences unity with heaven.” As one who played a role in the cultural fever of the 1980s Reform and Opening in Beijing (compare Illich’s role in the countercultural 1960s and 1970s in North America), Li has sought to integrate Marx, Kant, and Heidegger into Confucius — that is, to respond to problems posed by Marx, Kant, and Heidegger with Confucian wisdom.

Building on the thought of both Mou Zongsan and Li Zehou, the young philosopher Yuk Hui has engaged more directly than either with the challenge of technology and its historicity. His *The Question Concerning Technology in China* is an extended response to Heidegger, arguing at length that, “In China, technics in the sense we understand it today — or at least as it is defined by certain European philosophers — never existed.” In Hui’s effort to explicate the possibility of a Chinese technology distinct from that which developed in the West, it is possible to find philosophical echoes of Illich’s early interest in alternative or convivial tools.

Those of us who are trying to think after Illich could do much worse than to try to learn from these Chinese thinkers who have themselves been learning from and responding to the West.

The questions they raise will nevertheless not be settled in our lifetimes. As Illich well knew, our destiny is to live in the rivers north of the future. Let me thus close with a substantial quotation from Zhang Ailing, the greatest Chinese novelist of the 20th century. As she wrote in 1945, in a city devastated by Japanese aggression,

In this era, the old things are being swept away and the new things are still being born. But until this historical era reaches its culmination, all certainty will remain an exception. People sense that everything about their everyday life is a little out of order, out of order to a terrifying degree. All of us must live within a certain historical era, but this era sinks away from us like a shadow, and we feel we have been abandoned. In order to confirm our own existence, we need to take hold of something real, of something fundamental, and to that end we seek the help of an ancient memory, a memory of humanity that has lived through every era, a memory clearer and closer to our hearts than anything we might see gazing far into the future. And this gives rise to a strange apprehension about the reality surrounding us. We begin to suspect that this is an absurd and antiquated world, dark and bright at the same time. Between memory and reality there are awkward discrepancies, producing a solemn but subtle agitation, an intense but as yet indefinable struggle.

It is this intense but indefinable struggle that I experienced with Illich, and would like to continue to honor in his absence.

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