How one defines technology philosophically dictates a great deal about what you can and cannot say about it. What is your philosophy of technology? What kinds of questions does it allow you to ask and what avenues of inquiry does it close off? Provide an example of a question that can better be answered by your definition of technology than others and illustrate why this is the case?

I'm not a philosopher. I am a lawyer. But like most lawyers, I am trained to examine the strengths and weaknesses of particular arguments. Unfortunately, in the case of technology, there are multi-level arguments proposed by many great thinkers, which while easy to critique, don't easily lend themselves to a cohesive philosophy of technology. We have arguments that look at the way we conceptualize technology as a tool, or how technology is defined through use, or even as a mediating form that defines relations amongst humans. All of these claims address technology from different angles, as tools for oppression or liberation, as blinders to nature and humanity, or as fodder for social movements that may someday materialize. Listening to all these well thought out claims it is clear that technology looms large in the public mind. So why the silence? Why aren't all communication researchers taking up the mantle and bringing together a body of knowledge that can provide a robust debate concerning the philosophy of technology.

The problem is that technology is always the 'other'. It is the cause and never the effect. I don't think I take liberties with the understanding that most people just don't know how things work, and don't even think that they have a role in deciding what technologies are to be developed. Technology serves as a symbolic object that is imbued with inevitability and a lack of skepticism. What will come will come. Even many academics have limited their project to studying the 'effects' of technology. Media effects, content analysis, connectivity studies all look at technology after the fact. This

may not be intentional, and surely the scope of inquiry must be limited in many respects, but the trend is troubling. Only recently have we begun to see a shift in technology studies. Communication research has begun to take an active role in the construction of new technologies, such as the military funded, Flatworld project, as well as the Multi-School Immersive learning environment (holodeck format) soon to be developed.

When I first saw this question I thought wow this is hard! I've read works by Marx, Foucault, Heidegger, Winner and the like, but the task of coming to terms with an individual orientation towards technology involves much contemplation. How do I begin? Like most people who think about technology as a field of philosophical inquiry it is not something you just happen to do. There is usually an underlying motivation or situation that serves as the impetus for such an intellectual journey. In Winner's case, it was the spectacle of a huge nuclear energy plant built along the coastline bluffs of his hometown. Foucault, as a gay male, was certainly sensitive to discourses surrounding sexuality, and the role that science and technology plays in policing the mind and the body. Marx was so disturbed by the horrible labor conditions spurred by industrialism that he developed a powerful critique of capitalism that poked uncomfortably close to the contours of industrial technology itself.

In my own case, I am fascinated by the shift towards an information based economy and recent developments in communication technology. I am constantly stunned by the swiftness of adoption of new communication tools. At this same furious pace, we see constant intellectual property challenges, novel legal arguments asserted, and dangerously restrictive media oligopolies being established. The law and technology are starting to appear analogous. Indeed, Lessig, a noted jurist has come to these same

conclusions concerning the similarity between programming 'code' and the law. Like the law, individuals oftentimes take technology at face value, and envision its ubiquity as a sign of its success in ordering our world. I don't take the law at face value, because I have been trained to look beyond its opacity. Similarly, my years of study in the field of Communication have made me uniquely sensitive to issues relating to cultural production, globalization, and high technology. I am motivated and inspired by the connections I see between the effects that opacity in the law and in technology our having on our society. Turkle argues that we take things at 'interface value', that the surface has become more valuable than the underlying process. I think part of this stems from an absence of a general philosophy of technology, which this essay seeks to address.

To begin with, I'm not very technological, but like most people have used technology all my life. To even talk about a philosophy of technology -- a relatively recent field of inquiry -- is to stake out a position that stands outside of the traditional fields of science and engineering, so in that sense it is not an uncomfortable place for me to start from. Because a philosophy of technology involves many levels of analysis I would like to begin by setting forth the central precepts of my philosophy of technology.

First off, I don't assume that technology is politically, socially, or culturally neutral. Technological artifacts do have politics. One classic example is Robert Moses' design of the overpasses for Long Island. Moses built a number of beautiful parks and sites of leisure throughout greater New York. One such park included Jones Beach, a refuge for the well to do to sun and relax. Moses designed the overpasses for the roads leading into these prized parks such that buses could not traverse over them. They were simply built with too low of an overhead, so that poorer people who needed to use public

transportation could not get to the parks. Similarly, the design of the capitals in Washington D.C. and Paris were designed to create large thoroughfares such that mobs could be controlled. Even something as benign as a mechanical tomato harvester has politics, because it immediately displaces thousands of workers, and leads to the selective breeding of tomatoes with thicker skins, to withstand the roughness of the process. (And who likes thick-skinned tomatoes!) Tomatoes, mobs, and buses, don't seem like issues that necessarily demand a philosophy of technology, but unintended or not, well thought out technological projects can have serious consequences. The most poignant example is nuclear energy. Innis makes the point that certain technologies inherently require centralization or decentralization of a society. The development and use of nuclear energy requires a strong hierarchical government capable of securing the resource and population from accident or sabotage. Witness the lengths we will go through as a nation based on the suggestion that other countries may be mishandling their own nuclear reactor fuel. Technological development has consequences simply beyond its immediate utility.

Apart from these obvious outward examples of technological non-neutrality, there is also the internal measure as well. I contend that the practice of controlling objects through technology distorts the subject always. In this sense I am in agreement with the Frankfurt School theorists. The practice of technology cannot be conceptualized as simple tool use. In effect, through use, we act as extensions of technology and vice versa. For example, as I sit here typing out this exam, I am not concentrating over each letter I am typing, nor am I cognizant of the processes underlying the images represented on the screen. I am at this moment, in a sense 'being with the technology'. I am

concentrating on my thought process and the flow of my style, and the screen is a part of my mental representations, the symbolic analogue to my own present consciousness. Surely this cannot be considered neutral. I may think in similar ways, but my horizon of possibility includes the extension of my internal thoughts onto a pixilated screen. This may not seem so threatening, but what if I was flying a plane with several large rockets at my disposal. When children play video games, they soon find themselves lost in the game, not in the underlying process of the technology. Joysticks, mouses, voice commands, all are technological extensions or distortions of the body. Some communication researchers now call this concept flow, which is the ability to lose oneself in a technologically delivered messaged.(Scott) Donna Haraway takes a tautological twist to this concept by moving beyond the conscious mind, to the body itself. She inscribes the politics of the body by calling forth the cyborg as a metaphorical representation of what is happening when we lose ourselves in the spaces of technology. As technology becomes more and more sophisticated, we find ourselves having more difficulty defining the boundaries of technology. Patented OncomiceTM and Intelligent Agents are some of the technologies that demand our consideration of the non-neutrality of technology for our society. What does it mean for us to be patenting life? Does this not distort who we are as human beings? Or what if we use AI agents to be our slaves? What sort of teleological distortion allows us to claim we are human when the very extensions of our humanity are treated as sub-human. These challenges invite debate but should not privilege dystopian thoughts.

In fact, like Marx and Heidegger, I believe in the promise of technology. However, I don't agree with the assumption that modernist progression is inevitable. I

see a certain liberating potential in the uses and designs of certain technologies, but I believe that this potential can only emerge through our daily practices with it. What we use and how we use it determines how we see technology rather than from any internal ideology of technology that is so often debated in the political realm. The point is that we must become aware of how technology can come to dominate our 'lifeworld' in order to avoid denigrating the promise or hope for a civil society. In terms of daily practices then, Marx objected to the violation of the subject's freedoms by the capitalist mode of production. He argued that in not being able to produce what you wanted to produce, you become merely an instrument, a cog in a wheel. We were in fact technocratized -- technology distorts who you are as a subject--. The danger of course is that people are unaware of their own complicity. It is not about utopian or dystopian visions, but rather how we see ourselves in relation to technology. Will we be as Foucault argues, unaware of our own complicity in the totalizing influence of technology, agents in our own repression when we debate utopian or dystopian ideals. Or will we go beyond this debate, and discover that there is a horizon of understanding that emerges when we realize that we are blinded by technology in every theory, thought, and rationalization we make; A concept reminiscent of Plato's shadows on the walls of the cave. Heidegger would argue that we are liberated not by technology, but by coming to know that we are born into technology and thus are always challenged by dominant narratives to think in certain ways. The question of whether technology is inherently good or bad is a distraction. It is neither, and it doesn't matter anyway because technology is a given. Burke in his Grammar of Motives, argues that we are symbol using animals. Technology is the master symbol because it encompasses everything man made, it is a part of who we

are, the symbol that defines who we are. The real question is what dominant narratives work to influence the way we interpret technologies and how can we re-think technological design to suit our needs and daily practices in a manner that represents the good life, i.e. affirms the life world.

We need to discover how these dominant narratives are created, sustained, and altered. Historical materialism fails per se because it does not account for reproduction of the structures of power within a society whose basis for material production is rooted in information processing. Having a philosophy of technology outside of the boundaries of historical materialism helps us to conceptualize the link between knowledge and power, and define the discourses surrounding the technocrization of society. Therefore, my philosophy of technology looks at daily practices but is not rooted in the material conditions of labor. Rather my philosophy considers how the debate over technology is self-limited rather than imposed through base and superstructure. In some respects then I agree with Habermas assessment that technology nowadays only authorizes purposive rationality. We have come to define all aspects of the life world in terms of some sort of scientific instrumentalism. I argue that technology comes before science and that instrumentality precedes reason. We have always been technical, we have just gotten a lot better and faster at developing new technologies. I see this as the main reason technology has come to define the contours of our society rather than vice versa.

Unlike Habermas vision, however, I do not agree that communicative rationality can be separated from purposive rationality. I do believe that there are similarities among all humans that are wired, language being the most obvious example. But I don't see the problem of technology as simply being out of balance with the life world.

Communicative rationality seems like an arbitrary distinction to me. How can you separate out the workplace from the home? How can technology matter in one context and not in the other. This is why I don't believe in Habermas goal of achieving the ideal speech situation. You simply can't have it both ways. You can't argue on the one hand that purposive rationality stems from a world of historical materialism, which has just put its foot on the accelerater, while at the same time arguing that ideology is the driving force for communicative rationality. Habermas saw the pre-modern roots of communicative interaction as somehow in balance, which now only needs to be restored, through what else, technology. Pre-modern repression of communicative interaction is avoided through the purity of technological communication and all its attendant features, such as speed of delivery (absence of a middleman), anonymity, and mass diffusion. The problem, of course, is that you have the horse before the cart. Technology comes before communication. Habermas is ignoring two very important issues. The first is the issue of technologies as symbolic forms of communication. We communicate by how we use technology (technology includes hand symbols and language, anything produced by man). The second issue, is that Habermas concedes rationality to technology. He falls victim to the belief that rationality precedes technology. There certainly is a dominant strain of rationality that is uniquely tied to technology, but since when was it 'required' that technology had to be efficient or cost-saving? Habermas is privileging technology by separating its "purpose" from our relationship to it.

Another way to conceptualize this point is to think of technology the way you would think of the law. Technology is like the law in that it orders both economic rationalism and personal life experience. There are a number of troubling parallels

between Posner's Chicago School approach to caselaw and the way it has begun to intrude into all aspects of the 'lifeworld'. Law is a pure information based technology. Never mind that it is intangible. It is a human construct designed to reproduce the dominant narratives of a society. The Chicago School has reflected this acceleration towards economic efficiency that concerns Marx and is the driving force behind Habermas's conception of purposive rationality. The work world is intruding onto the lifeworld. Like technology, the law regulates both aspects of our lives in many respects. For example, recent court rulings regarding the anti-trust case between the U.S. government and Microsoft focused almost exclusively on the concept of efficiency. Anti-trust caselaw is concerned only with inefficiencies in the market. Microsoft attempted to make the argument that it was not creating a non-competitive environment, but was actually increasing the number of options consumers had, even if it was bundling the software architecturally into its operating system. There was never any discussion of the danger of cultural imperialism, or of the effect that a dominant browser would have on things such as open access or more importantly weaknesses that virus program writers could exploit. The sole determinants were product choice and diffusion, rather short-sided concepts considering the wide ranging scope cases of this nature have had on societies around the world.

Similarly, Java sued Microsoft regarding the changing of its code in contradiction to its contract with the software giant. Microsoft was able to assert the defense of efficient breach. Which under contract law means, in a business dealing, if you get a better deal, you are allowed to breach a prior contract leaving you liable for simply the monetary damages suffered by the other party through detrimental reliance and directly

under the breach. No such thing as punitive damages for breach of trust, chicanery, or lost value of time, exist under this Chicago School inspired theory of rational exchanges in the business world. The only measure that comes close to representing intangible damages that flow directly to the lifeworld, is the ability to get treble damages against businesses that knowingly seek to use their monopoly power to gauge customers. These cases are rare and far between.

This logic of the law, what Habermas would call purposive rationality, has infected the lifeworld as well. The law has begun to equate human dealings with business dealings. Some of the more nefarious examples include non-competition or trade secret covenants which are required as conditions of employments. These contractual agreements usually stipulate that employees who work in information intensive fields, should not be able to change jobs or work on competing products. The law treats the contractual transaction as though it has occurred on an equal footing, discounting the fact that large corporations have a high degree of leverage in dictating the terms of an employment contract in a highly specialized field, such as the software industry. Here the law intrudes on the lifeworld, when employees decide they don't like living in Redmond Washington, and would rather move to the bay area, only to find their labor options restricted. The most interesting aspect of this is the connection between law and technology and between technology and information. Like the most opaque and sophisticated of technologies, the law is something that appears almost intangible. The principle of remediation works for the law, in the same way that it works for technology -- with caselaw piling upon caselaw -- . The interesting point about this is that people do talk about the formation of the law, the underlying political process, the justices who

decide the cases, in a manner that is completely opposite to the debate concerning technological development. Never mind the fact that the legal debate is blinded by economic rationalism, the point is that there is debate, and amongst legal scholars at least there is constant debate over the concept of positivism and rationalism in the law.

I tend to take the same methodological point of inquiry that Foucault does, which rests primarily on practices and restricts the scope of inquiry to the genealogy of the discourse. When Foucault speaks of the panopticon to illustrate the concept of self-surveillance, he is showing how technology helps to define the dominant discourse. The problem with Foucault's point of view however, is that it is nihilistic. It leaves us with no promise for the future. At least Heidegger sees liberation in our being able to understand that we are blinded by technology. Foucault doesn't even seem to acknowledge this. He leaves no political solution, because he sees any attempt to challenge a dominant structure of power, as being a tool in one's own oppression. I don't see it this way. I don't think it's pointless to debate the role of technology or to concede that it is merely about a Nietschean will to power. I would argue that the panopticon not only illustrates the conception between knowledge and the structures of power, but that it also illustrates the importance of technological design in creating the body for the discourse. My philosophy suggests that the design and use of a given technology tells us a lot about the society it was created in, by giving us a solid embodiment of the dominant discourse. This is a method of extraction that gives us frames of reference or windows on the past that aren't necessarily tied down to rationalism. It also contains within it the seeds for policy debate that are not constrained by subjective interpretations because it looks instead to the discourse that brought forth through a specific technology. I think

Foucault implicitly accepts this argument about technology when he uses technical examples to illustrate his method of analysis.

My philosophy of technology helps to address the issue of opacity and the preponderance of new information technologies that other theorists do not fully address. How do opaque technologies redefine the debate over their use? How can technology serve as a point of resistance when its own users don't understand the fundamentals of the technology itself? Turkle makes a great point when she argues that most people don't want to know how things work, they just want to be able to use them. She is not really saying anything new however, she is simply re-asserting the primacy of our relationship to technology. My philosophy allows you to move beyond this. Here argument is reductionist in that she argues that computer interfaces have become post-modern. They haven't become post-modern, they have simply altered our relationship to technology, a relationship which can be characterized as post-modern.

For example, Bijker makes an interesting argument about the evolution of the bicycle. He shows how a competing set of cultural and business interests intertwined to create what eventually became the modern form of the bicycle. This is technological design as a form of discourse. People produced their own versions of bicycles and tinkered with the technology to suit their interests. It was not based on rationalization but on cultural preference. For example, women were expected to ride sitting sideways, with long skirts, which was a challenge in and of itself. My conception of technology allows me to undertake a similar study of new technology from a purely informational standpoint. Under Moore's law microcomputing will become more powerful and less conspicuous. There is talk of micro-computers being embedded everywhere, in our

clothing, in our houses, and even our bodies. Marx theory doesn't hold up here, because information processing is a product, and in many respects the distinction between consumer and producer is blurred by the ubiquity of computers and their ability to produce and distribute intangible knowledge goods.

My philosophy of technology helps us to account for the increased role that information processing plays in our everyday social spaces. I can consider points of resistance as a unified whole, without making distinctions between work and home. It is the relationship to the technology that is paramount. It has been said that really good technology has the appearance of magic. Opacity is bringing us closer to this reality. Habermas would have trouble addressing opacity under his philosophy because magic lies within the realm of the pre-modern. His theory of communicative action does not account for the merging of the workplace with the lifeworld. The media no longer can be said to replace communicative rationality with simple action coordination because it relies on a false dichotomy given this merger. Frankfurt school theorists face the same dilemma because they do not account for users being capable of producing their own cultural products. Film production is certainly opaque to people like myself, who do not have a background in the field, but Adorno and Horkheimer's theory of enlightenment as mass deception was based exclusively on a certain mode of transmission, from producer to consumer. With code you can modify any computer technology and when networks are involved, transmission flows both ways.

As a thought exercise, imagine that microcomputers are embedded everywhere. We cannot see them. We know they are there. Also imagine that everyone is networked. Information flows freely. Most people don't know how computers work, but we know

how to use them. Computer programming has become so sophisticated that it is akin to human language. Technologies cease to be thought of as single objects, because they are multiplicitous and malleable. Processors can run millions of applications at the same time. Where does the discourse surrounding technology go when, the same technology can be appropriated by different groups, for different reasons? What happens to rationalism when a virus writer decides to write a program that turns every house purple and every article of clothing into an American flag logo. What about users programming their micro-computing worlds to serve the goals of anti-surveillance? My philosophy of technology is free to tackle these issues in novel ways, by drawing upon prior examples of technological use, analogizing them to the present, and defining the conditions under which certain practices are likely to develop. This philosophy also avoids the potential conflict between empirical communication research and the rhetorical aspects of our field. You can examine issues without having to pre-suppose an underlying theory of society. This kind of probing can only be accomplished if you have a coherent philosophy of technology going into your research project.

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