The Separation of Technology and Ethics in Business Ethics

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ABSTRACT. The purpose of this paper is to draw out and make explicit the assumptions made in the treatment of technology within business ethics. Drawing on the work of Freeman (1994, 2000) on the assumed separation between business and ethics, we propose a similar separation exists in the current analysis of technology and ethics. After first identifying and describing the separation thesis assumed in the analysis of technology, we will explore how this assumption manifests itself in the current literature. A different stream of analysis, that of science and technology studies (STS), provides a starting point in understanding the interconnectedness of technology and society. As we will demonstrate, business ethicists are uniquely positioned to analyze the relationship between business, technology, and society. The implications of a more complex and rich definition of 'technology' ripple through the analysis of business ethics. Finally, we propose a pragmatic approach to understanding technology and explore the implications of such an approach to technology. This new approach captures the broader understanding of technology advocated by those in STS and allows business ethicists to analyze a broader array of dilemmas and decisions.

KEY WORDS: artifacts, business, ethics, pragmatism, technology, values

Introduction

The purpose of this paper is to draw out and make explicit the assumptions made in the treatment of technology within business ethics. Drawing on the work of Freeman (1994, 2000) on the assumed separation between business and ethics, we propose a similar separation exists in the current analysis of technology and ethics. After first identifying and describing the separation thesis assumed in the analysis of technology, we will explore how this assumption manifests itself in the current literature. A different stream of analysis, that of science and technology studies (STS), provides a starting point in understanding the interconnectedness of technology and society. As we will demonstrate, business ethicists are uniquely positioned to analyze the relationship between business, technology, and society. The implications of a more complex and rich definition of 'technology' ripple through the analysis of business ethics. Finally, we propose a pragmatic approach to understanding technology and explore the implications of such an approach to technology. This new approach captures the broader understanding of technology advocated by those in STS and allows business ethicists to analyze a broader array of dilemmas and decisions.

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Separation thesis

In Freeman's (1994) article introducing the separation thesis, Freeman asserts that people in our society separate business and ethics into distinct concepts. Subsequently, practitioners and academics are constantly attempting to bring these discrete concepts back together in an artificial fashion. The separation thesis is assumed throughout business literature:

> The discourse of business and the discourse of ethics can be separated so that sentences like 'x is a business decision' have no moral content, and 'x is a moral decision' have no business content.
>
> (Freeman, 1994, p. 412)

The separation thesis piggybacks on Freeman's first principle assumed in analysis of business, "The Principle of Who and What Really Counts" which states, "the primary function of the corporation is to enhance the economic well-being, or serve as a vehicle for the free choices of, the owners of the corporation" (p. 411). If business is in existence to make money, and ethics are distinct from the framework of business, then society needs to bring the two back together again in some manner. "As long as I can separate the discourse of business and the discourse of ethics there will be room for people to connect them – to hold particular business concepts up to the light of ethical discourse and to do criticism on a large scale either condemning or glorifying business as a practice" (p. 412). Separating business from ethics both simplifies and makes abstract the study of business by marginalizing the uncertainty and 'fuzziness' of ethics. Freeman argues that business ethics will be more useful and more robust when it can set aside the separation thesis and conceptualize business in fully moral terms.

We propose a second and similar level of separation – that which separates technology from ethics or values. As we will demonstrate, the implicit assumption with most business ethics authors is that technology and ethics are distinct entities that must be brought back together. Technology is simple, separate, and *abstract* from our social system and must be integrated back into the fold – technology is assumed to be a distinct object waiting to either control or be controlled by society. Just as business is treated as distinct and abstract from the values of our community, so, too, is technology.

We propose, however, that technology is developed by humans and with a value system present. A few in business ethics (Buchholz and Rosenthal, 2002; Donaldson, 2001 De George, 1999;) and STS (Johnson, 2001; Sclove, 1992 Winner, 1986;) have attempted to argue that technology and ethics are irrevocably intertwined without clear delineation. However, up to this point, the assumptions being made in the business ethics literature have not been made explicit. The purpose, at this point, is to understand how the abstraction of technology in the form of a second separation thesis manifests itself in the arguments put forth in the literature. As we shall demonstrate, the assumption that artifacts are separate and either outside the influence of humans or completely within the purview of human wishes misses the interaction of society and technology where the two are not separable.

Traditional views of technology

Philosophers of science and technology in addition to the (relatively new) STS have been arguing base assumptions about technology and society for years. The traditional view of technology posits two alternatives – technological and social determinism – at either end of a spectrum. Philosophers Ellul (1962), Heidegger (1977), and Heilbroner (1967) are classic technological determinists who view technology as a powerful force in society. Technological determinism incorporates "the idea that technology develops as the sole result of an internal dynamic and then, unmediated by any other influence, molds society to fit its patterns" (Winner, p. 21). Such control requires technology to exist outside the construction of society and relies upon an artifact's 'essence' as is described by Heidegger to preserve the technology's integrity outside the influence of individuals. A common metaphor for technological determinism is a railroad line where "technology is conceived as a separate entity that follows a linear path. Technology is like a train with a track that is fixed, although not known in detail… One cannot hope to change the train's direction, only to check its speed and the safety of the crossing" (Bijker,
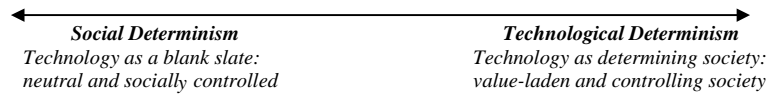
Figure 1. Traditional views of technology.

1993, p. 129). In a technological determinist view, society has a very limited role in the control of technology. In fact, some will argue that humans are literal slaves to artifacts (Ellul). A natural repercussion of such determinism is that society's traditional moral values are subject to assault by technology.

As opposed to technological determinism, for social determinism "what matters is not technology itself, but the social or economic system in which it is embedded" (Winner, p. 20). Technology has no 'essence' that is unchanging from our influences but rather has meaning constructed by social groups. Artifacts' existence and meaning are determined by society. This social creation of technology counters technological determinism in marginalizing the power of artifacts' features in determining their use and contains the possibility of continuous shaping and reshaping of technology during *all* its stages of development (Bijker, 1995). These opposing views of technology are traditionally positioned at either end of a single axis as depicted in Figure 1.

This traditional view of technology is present in our current business ethics literature. While the authors do not explicitly state either social or technological deterministic assumptions, the shaping of their problems, arguments, and solutions relies upon such an abstraction as depicted in Figure 1.

Technology as directing society

Certain business ethicists have acknowledged and/or argued for values being embedded in technology while maintaining a certain organic development process. Perhaps the most pointed article on technology and its impact on society is King's (1994) "Tools-R-Us" where King argues that society shapes tools to achieve intended results and these tools in turn shape society (e.g. in a room full of hammers we find nails). King warns that society can allow tools or technological knowledge to shape intentions through a "soft system methodology" which is unintended by the designers of technology.

Unbeknownst to users or society at large, the tools or technology will quietly shape our actions and even objectives through their *inherent* capabilities. The danger of such a scenario, according to King, is that society is unaware of the influence of technology on them and, therefore, does not take proactive measures to identify or counter such influences.

Similarly, arguments around the difficulty of consumers or users in effectively modifying or directing technology's social implications also assume certain inherent values directing users outside their control. In his article on the dangers of unrestrained invention in our current "Technological Age", Koehn (1999) combats the neutrality of technology by arguing that it is impossible for users to opt out of new technologies because they are not only a product of the proposed technology, but also the technology alters the very possibilities of resisting that technology. As such, technology and its inherent values are literally forced on society by the time the technology is introduced. Users cannot be expected to make a choice as technology alters the very choices available. Clearly, Koehn takes a more deterministic approach by both the value-laden-ness of technology and the inability of individuals to influence an artifacts purchase or use.

Technology as blank slate

The usual arguments within the literature against a more deterministic technology center around technology as a blank slate waiting for individuals' control and use. Technology, in this scenario, is created by society and can be used in any manner without undue influence by any 'inherent' technological values. Herschel and Andrews (1997) exemplify this approach by arguing, "technology is mistaken as the culprit because it acts as a conduit through which unethical behavior is demonstrated". While acknowledging the ethical implications of technological advances on business communication, the authors insist that the features or attributes of

technology do not determine behavior yet do result in both intended and unintended consequences. Technology gains meaning only as used in interactions and there are no ethical issues inherent to technology. Johnson (2001) refers to this type of analysis as the "guns don't kill people, people kill people" approach where technology is seen as a neutral object waiting to gain meaning and values from the people who use it. Herschel and Andrews appear to hope to use technology in a responsible manner regardless of the technology chosen. These authors are assuming technology to be an empty slate waiting for human interaction where the control of technology lies well within the reach of society.

Many of the arguments around responsibility of organizations in advancing technology also assume a certain amount of neutrality of technology. Those authors who tout the value-neutrality of technology (Drake et al., 2000; Herschel and Andrews, 1997; Peace et al., 2002) place responsibility on the organizations and users to retain appropriate values when adopting a new technology. These authors urge organizations to develop appropriate norms, policies, and procedures around the recently introduced technology regardless of the capabilities of the technology. They do not, however, advocate the needed critical evaluation of the technology itself before it is adopted within the organization.

Problems with the traditional approach

Each of the above arguments in the treatment of technology marginalizes the role of ethics in the design, development, production, distribution, and maintenance of technology. For social determinism (or social constructionism), the assumed value-neutrality implicit in treating technology a blank slate mitigates any value of the social control of design. While organizations *can* influence the design and development of technology, this is not a moral exercise as technology is seen as neutral to its eventual uses and society at large. End users and other stakeholders are not influenced or directed by the developed technology and, therefore, the design and development of technology is not a moral exercise. Analyzing technology in an ethical context is a *mute* exercise – we as users and stakeholders are not affected by a neutral technology. On the other

hand, for technological determinism, when technology is treated as directing society, technology's inherent values are outside society's control. Therefore, while technology is an interesting moral force for an organization to consider, we have limited abilities in directing, influencing, and controlling technology. Analyzing technology in an ethical context is a *futile* exercise – we just do not have control over the advancement of technology. In both views, technology is simplified – either to a blank slate outside any directing of influence *of* individuals or to a value-laden artifact outside any directing influence *by* individuals. This traditional approach simplifies technology by diminishing the role of ethics in the analysis of technology.

Alternative view of technology

If we slow the arguments down, we see that there are actually two separate assumptions that are not required to move in tandem. Therefore, in lieu of a single axis along which to make an argument and treat technology (Figure 1), we propose two distinct assumptions made in the analysis of technology. The first involves the manner in which technology is controlled. Artifacts, when viewed as outside human influence, evolve in either a predetermined or undetermined manner – in either case the manner is not determined by us. This type of *organic control* of advancement is inherent to the technology and is not influenced by society. For this type of control, technology is that which we must discover as it unfolds on its own volition. On the other hand, artifacts, when viewed as distinct objects waiting to be acted upon by us, advance as we decide to advance them. Technology in this scenario is under *social control* and is the object of our desires. Technology is that which is created by society and has no predetermined direction or essence.

The second assumption involves the degree to which values are inherent to a particular artifact. Technology can be viewed as *value-laden* with inherent abilities to influence or direct its uses and users. Technology, in this scenario, has inherent values in its design, history, production, use, etc which affects society, organizations, and individuals. Technology can also be treated as *value-neutral* where artifacts are indifferent to their end uses. Values are
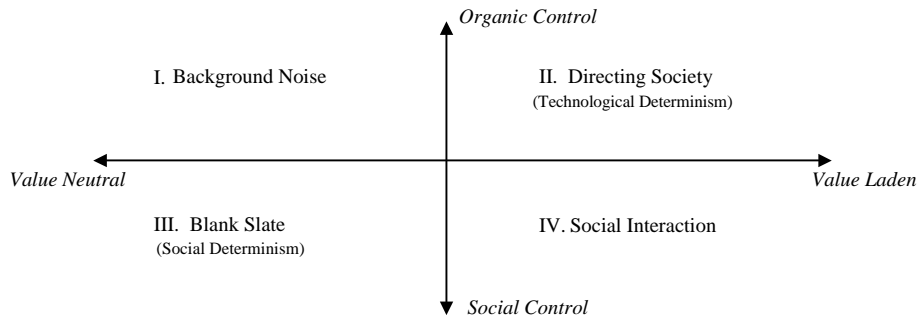
Figure 2. Technology as…

Figure 2 diagram text:

Organic Control

I. Background Noise

II. Directing Society
(Technological Determinism)

Value Neutral

Value Laden

III. Blank Slate
(Social Determinism)

IV. Social Interaction

Social Control

seen as too mushy and uncertain to be conjoined too tightly to the absoluteness of technology. Technology when treated as value-neutral is a blank slate waiting for human use.

As we have seen, the tendency is to place both these dimensions along the same axis. If technology is value-laden, then it is assumed to have an essence that advances under its own control. If technology is value-neutral, it is assumed to be a blank slate that advances under society's control. Placing these dimensions along the same axis simplifies technology to the point of abstraction and we are left with an either/or level of analysis where the arguments become polarized. By remaining on the single line, we miss the interconnectedness of technology and society. However, The control and values of technology do not require a correlation as is depicted in Figure 1. Rather, the interconnectedness of technology and society is best exemplified by Figure 2.

Separating the assumptions made in the traditional approach to technology allows us to capture the interconnectedness of technology and society (technology as Social Interaction as in quadrant IV) where technology is both socially constructed as well as constructing society and artifacts are malleable yet directional. Previously, we were left to either miss the tendencies and momentum of technology to direct and facilitate individuals by assuming technology to be value-neutral (social determinism) or miss the societal influence on technology in assuming technology to advance through organic control (technological determinism). Both options require a certain abstraction of technology. The neutrality arguments assume technology to be an abstract blank slate while the organic control arguments assume technology to be an abstract entity evolving on its own. By slowing down the arguments and separating certain assumptions we are able to maintain that technology is value-laden yet controlled by society. The additional two options in Figure 2 – technology as background noise and as social interaction – are also found in the business ethics literature to a certain extent.

Technology as background noise

The argument that technology is both value-neutral and advancing outside of society's control is of arguably little interest to ethicists – technology can be merely treated as part of the environment for our actions. Individuals and organizations are expected to act without regard to technology and have no responsibility (or interest) in analyzing technology as it lies outside society's control. Allinson (1998) comes closest to this argument in his analysis of the Challenger launch decision where the author discusses the mistake in blaming technology for bad technological decisions. For Allinson, "demon is not technology, but one who chooses the risky technology". Allinson's "Cog in the Machine Manifesto" exemplifies the perceived risk in attributing values to technology – we are left to be merely cogs in the machine with our actions dictated by technology. Allinson assumes that by attributing values to technology, we would be rendering ourselves morally irresponsible for subsequent actions and fall into a technological determinist view. Allinson is assuming technology to lie outside of human intervention otherwise we could control the values attributed to artifacts and control our responses to technology.

Technology as social interaction

The most promising stream of analysis is that which finds technology both value-laden and controlled by society. De George (1999) exemplifies this view when he touts the danger in ignoring the importance of technology on society. He refers to this as the "head in the sand" syndrome wherein new ethical issues introduced by technology receive little attention and the impact of new technology on society has yet to be assessed. De George goes further to condemn the abdication of ethical responsibility for information technology and coins the term "the myth of amoral computing" to describe this abdication. By believing the myth that computers are neither good or bad but merely contain simple logic, business ethicists are accepting the "technological imperative" where technology exists through a natural, objective and fair process. Such false assumptions undermine businesses taking ethical responsibility for their actions with regard to technology. This "technological imperative" lies in contrast to Allinson's "Cog in the Machine Manifesto" where we are left to be merely cogs in the machine with our actions dictated by technology. De George emphasizes the ability of organizations and individuals to continually change and modify technology before taking it to consumers.

Another example of a more social technology is in Donaldson's social contract approach to the ethical issues inherent to technology. Donaldson (2001) attempts to discern the value changes we may have seen before ("hypernorms") and those which are fundamentally new. In doing so, he recognizes that both types exist in the introduction of new technology – there exist both old issues with new implications (e.g. privacy) and new ethical issues (e.g. the printing press undermining the authority of the Catholic Church). The "hypernorms" come into conflict with the "moral free space" required as technology is developing and is pushing the boundaries of our moral values. Donaldson's social contract approach has an emerging new technology reflect social contracts in collision. In order to resolve the conflict, society develops new social contracts that are a compromise between behaviors driven by technological innovation and our preexisting social values. As such, the new technology allows society to maintain the core norms which do not change. Donaldson's technology has both inherent values pushing against technology and society's "hypernorms" that influence the development of technology.

An approach from STS – socio-technical systems

Where business ethicists are making implicit assumptions in their treatment of technology, STS scholars have been explicitly analyzing technology and society in an attempt to understand how the two interrelate. Not surprisingly, their analysis of the interconnectedness of society and technology is more robust than that in the business ethics literature. Rather than simplifying technology in the hopes of isolating its impact, many within STS have come to realize that technology does not exist outside a community. Just as "mother" is not understood outside "family", technology is not understood outside society, and the term "socio-technical system" is used to capture this more complex understanding of technology. Socio-technical systems are positioned contrary to both technological and social determinism (as described above) where the artifact is simple and abstract. Langdon Winner, in his seminal article "Do Artifacts have Politics?", combats the premise that "people have politics; things do not" (Winner, p. 20). Winner proposes two ways in which artifacts can contain political properties (or values): those technologies with flexible features which are strongly compatible with certain values and those with intractable features which require certain values. Winner advances a "theory of technological politics" which "draws attention to the *momentum* of large-scale *sociotechnical systems*, to the response of modern societies to certain technological imperatives, and to the ways human ends are powerfully transformed as they are adapted to technical means" (Winner, p. 21, emphasis added). Winner maintains the ability of societies to influence and hold sway over technological advances by emphasizing the importance of understanding the implications of technologies before they are introduced to the population (Smith and Leo

Marx 1994). While Winner argues that certain technologies are political "in their own right" or in "the things themselves" (Winner, p. 22), he also identifies society's control over the advancement of technology.

Building on Winner, Sclove also steers away from any determinism debate. Sclove see technologies as "social structures" that "structure social relationships… independent of their (nominally) intended purposes". (p. 140). These artifacts "*shape* but do *not determine* the nature of social reality" as "technologies themselves are contingent social products" (p. 140, emphasis added). Sclove's analysis incorporates the interplay between technology and society wherein technology is a social product that has tendencies which shape a society. Law (1987) also unsatisfied with the arguments at either end of the determinism spectrum, combats technological determinism in stating, "Technology does not act as a kind of traffic policeman that is distinct in nature from the traffic it directs" (Law, p. 116); and yet maintains that social constructionism relies too heavily on the social directing growth in technology. Law's argument is in direct contrast to the common railroad or traffic metaphor found in the technological determinism literature outlined above. MacKenzie and Wajcman (1999) also resist the separation of technology and ethics when they find it "mistaken to think of technology and society as separate spheres influencing each other: technology and society are mutually constitutive" (MacKenzie and Wajcman, p. 23).

From these authors, we get a different picture of technology. Rather than being deterministic of or constructed by society, technology is one part of an interaction with society – both parts leaning on and influencing the other. The language turns from 'determined,' 'controlled,' or 'created' to 'momentum,' 'tendency,' 'contingent,' and 'shaping.' The key to socio-technical systems is the lack of separation or abstraction of technology. Artifacts are not understood outside the community that creates and consumes them. Nor are they simple. By analyzing socio-technical systems as opposed to abstracted artifacts, these STS authors are not faced with if or how social values should be brought into the discussion, as social values were never distinct in the first place.

Remaining problems with the STS approach

While the authors above have made a start in breaking away from an abstraction of technology and ethics, they have not relinquished the separation of business and ethics. As Freeman notes, the separation thesis has lead to "the standard claim… that capitalism is a system that rests solely on individual self-interests to the exclusion of the others, and that the 'natural' drive of humans to compete is the main fuel of the engine of capitalism" (Freeman, 2000, p. 170). If, instead, business and ethics were never distinct, but rather part of the same narrative, we would have a different concept of value creation encompassing, but not solely revolved around, profits. The authors above, however, rely upon the understanding of business as solely a profit center devoid of ethical considerations or objectives.

Winner, in describing the interplay between an artifact (a tomato harvester) and society describes "an ongoing social process in which scientific knowledge, technological invention, and *corporate profit* reinforce each other in a deeply entrenched patterns, patterns that bear the unmistakable stamp of political and *economic power*" (Winner, p. 27, emphasis added). In some of his more deterministic writings, Winner is equating knowledge, invention, and profit as separate from ethics and as directing society to less desirable ends, which for Winner is political and economic power.

Sclove finds himself needing to position his argument contrary to economic theory which he finds assumes "one-directional causality: the basic structure of any society… is not affected *by* market interactions, including by developing and deploying technologies" (Sclove, p. 147). Sclove finds economic theory to maintain the market cannot influence society and is therefore abstract and separate. Rather than market demands determining which technologies succeed and which fail, Sclove sees technologies themselves influencing the desires individuals and the demands of the market. With this understanding of markets, Sclove disagrees with the call from economists for an "accelerated pace of technological innovation" which he presumes is with the "unexamined assumption that as long as an innovation sells profitably, it is an unalloyed social blessing" (Sclove, p. 139). Based on the assumed separation of business (or the market) and society,

Sclove is then left to "privileging democracy over economics" (Sclove, p. 149) *as if the two had mutually exclusive goals*.

Unique position of business ethics

The hesitation of STS scholars to forgo the assumed separation of business and ethics is just one factor that places business ethics scholars in a unique position to weigh in on the separation between technology and ethics. The abstraction of technology within business is well within the purview of business ethicists and the discussion around technology and ethics should not be left to scholars within STS. First, technology is fundamental to understanding business. Classically, not only does technology or innovation serve as a distinguishing feature of the firm (Penrose, 1995; Schumpeter, 1934), but also it serves as the foundation of the founding of new ventures (Amit, et al., 1993). Organizational mission statements exemplify the well-grounded theory: "The mission of Merck is to provide society with *superior products and services* by developing *innovations and solutions* that improve the quality of life and satisfy customer needs…" (www.merck.com); or Ford's mission to "… deliver *outstanding products and services* that improve people's lives". (www.ford.com). New artifacts are designed, developed, produced, and distributed in small and large businesses in the market – any discussion on the separation (or lack there of) between technology and ethics *must* be within the larger discussion of business.

Further, we cannot relegate the discussion around technology and ethics to engineers and scientists. Business managers and executives (and those that study them) must understand all of the ramifications of their resource allocation decisions and guidance around innovation. Misunderstanding the interplay between technology and society and glossing over the abstraction of technology does not lead management to skip over ethical decisions as all decisions have value components. "Avoiding discussion of ethics and trying to remain agnostic on the subject does not … make organization studies value-free. Such a strategy entails that they, in effect, do ethics badly" (Wicks and Freeman, p. 3). Ignoring the separation thesis in an analysis of technology leads us to ignore a vital piece of our narrative of business and technology.

A different approach to technology

Implications of the current approach

By teasing out the implied assumptions, the abstraction of technology in the current treatment of technology within business ethics literature becomes clear. However, do we really want to make those assumptions? By actually making assumptions explicit, many authors may change their arguments. If we move away from the abstraction of technology, we have more options (as in Figure 2 above) in analyzing how technology works for us in making a better community. Within the more traditional approach to technology (as in Figure 1 above), we are resigned to certain types of analysis due to the simplification of technology. By assuming technology to be simple artifacts with intractable features, we tend to demonize certain technologies out of hand. Technology, as a black box and analyzed out of context, is treated as either good or bad where we gloss over the many decisions leading up to the introduction of a technology to a consumer or an organization. Understanding the interconnectedness of society and technology opens the door to understanding that certain technologies (in the broader sense) are good or bad given the manner in which they were designed, developed, adapted, or adopted. The employee monitoring system developed by Y and implemented by X may be bad – however not all employee monitoring systems must be so.

Further, the simplification of technology to a neutral, blank slate leads us to place ethical discussions *after* the adoption of certain technologies thereby ignoring the influence of technologies on the behavior of individuals. By the time a technology is introduced to an individual, organization, or society, its "intractable features" (Winner) influence it users. Calling for the responsibility of organizations to maintain certain behaviors regardless of the technology ignores the influence of the value-laden technology. The abstraction and simplification of technology misses the complex and rich nature of

socio-technical systems. Rather than black boxes waiting to be analyzed, technology is an involved set of relationships between individuals, organizations, and artifacts.

Pragmatic approach

Pragmatism allows us to capture the tendencies of technology while understanding that we, as humans, are still able to direct the advancement of technology through the complexity of socio-technical systems. Three key facets of pragmatism – interaction/ emergence, tendencies, and multiple interpretations – are useful in the analysis of technology and society. Pragmatism captures the richness which emerges from the *interaction* of technology and individuals and society. The whole is more than the mere sum of its parts, and new qualities emerge where the techno-logical system is more than just the bits and bytes and algorithms required for it to function. No longer can we definitively say something works 'well' or is 'good' independent of the situation. Nor can we necessarily define an artifact independent of its sur-roundings. Rather, the functionality and judgment of the technology is interactional and dependent on the situation. The interaction and emerging qualities are critical to pragmatism (Dewey, 1929, 1958) and are also vital to understanding technology.

If artifacts cannot be understood outside their greater community which is constantly changing, we cannot say there exists an 'essence' of an artifact with controlling or predetermined actions. Rather tech-nologies would have *tendencies* or momentum to influence users in a certain manner – but individuals can also influence that tendency. Further, *multiple interpretations* (Wicks and Freeman) are particularly important when designing technology for future uses and users. Without a fundamental nature, artifacts will not be seen and inferred by everyone in the same manner. While STS scholar Bijker (1993, 1995) proposes interpretive flexibility to describe the multiple interpretations of a single artifact by dif-ferent social groups, the ethical component is miss-ing from his analysis. Pragmatism provides the "reasonable pluralism" (Freeman, 1994, p. 414) to add a value judgment, 'is this interpretation benefi-cial and does it work?'.

What questions should we ask about technology?

A pragmatic approach to the study of socio-technical systems opens the door to more complex questions around technology. Where we are currently rele-gated to answering yes/no or go/no-go decisions around technology, we could be analyzing the spectrum of dilemmas and decisions around a socio-technical system. Such a complicated notion of technology captures pervasiveness of ethical dilem-mas in our decisions. Instead of analyzing a particular artifact irrespective of its use and users, we need to ask questions throughout the design, development, production, distribution, and maintenance process. The more complex notion of technology is arguably more interesting for business ethics by giving us a broader arena for analysis, by emphasizing the reality of 'ethics everywhere', and by giving us a new way to think talk about technology, business, and ethics.

Using the pragmatism's value of usefulness allows us to ensure that our artifacts work within our community.

> Instead of offering specific and detailed content to the term, the pragmatic value of usefulness simply requires those engaged in research or decision-making to scrutinize the practical relevance of a set of ideas as defined by their purposes and those shared by their community (e.g. within a country, a corporation, a research stream) (Wicks and Freeman, p. 15).

By moving us away from the abstraction of techno-logy, a pragmatic approach would help us find the questions we should ask about the technology we develop, produce, and distribute. Martin and Freeman (2003) suggest starting with four key concepts from ethics: self; relationships with others; community; and property. How would our new technology affect each of these key concepts? Where do our existing ideas and values work and where do they break down? A new approach could not study technology without also including an analysis of our traditional moral concepts of self, relationship with others, community, and property. We need to ask ourselves "how will this technology allow us to redescribe ourselves and our communities so that we can contribute to human flourishing and retain our core social values?" (Martin and Freeman, 2003, p. 359). A pragmatic approach to

socio-technical systems brings forth the "heretofore concealed importance of technological choices" (Winner, p. 55–56) and allows us to ensure that 'technology' in the broader sense of the word works within our community.

Future research questions

Questioning the assumptions made in the treatment of technology in business ethics literature opens up many avenues of future research within business ethics. One of the cornerstones of a pragmatic approach is the integration of theory and practice and many of the implications of this article can be found in both arenas.

Pragmatic approach

While we have outlined a very brief sketch of a pragmatist approach to technology, business, and ethics, more must be done to fully explore this methodology and its pertinence to the study of socio-technical systems. Building on the work of Freeman (1994, 2000), Wicks and Freeman (1998), and Buchholz and Rosenthal (2000, 2002) a more comprehensive approach to analyzing technology would move the discussion within business ethics. In doing so, our assumptions about technology and its influence on society should be made explicit and therefore could change some of our arguments. Does a pragmatic approach make certain arguments disappear from our radar screen? It will make us reframe existing problems at a minimum. Rather than arguing for or against certain technologies as if simple and abstract, we would begin to understand technology's interconnectedness to society.

Social structures

In our study of technology, we can now move beyond yes–no questions for the introduction of particular technologies or artifacts. Winner advocates critically evaluating "seemingly innocuous design features in… technologies [which] actually mask social choices of profound significance" (Winner,

1986, p. 28). Analyzing artifacts in the final design or development would merely 'tack on' values in a separate 'impact on the environment' analysis of technology. Rather, we should consider technology's impact on our community throughout the design, development, and distribution process. "Consciously or unconsciously, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a very long time" (Winner, 1986, p. 28). Understanding the interplay between individuals, organizations, and artifacts will lead us to understand that we must be conscious and deliberate in designing the social structures (Sclove) of our community.

Definition of technology

How we define and view artifacts shapes how we analyze them. Technology takes on many different meanings within academic and lay analysis. For some, technology encompasses advanced technology, for others it is a societal outlook or even a single type of information technology. Throughout the first portion of this paper, we used artifact and technology interchangeably as is assumed in the current literature in the simplification and abstraction of technology. However, if we change the definition of artifacts from something individuals or organizations make (Winner) to a socio-technological system, it is impossible to study the artifact outside the value-system of the community. Not only would this change our unit of analysis, but could change the way we view business. If business is based on technology and artifacts (Schumpeter), and those artifacts are not understood outside the value system of the community, then business is not understood outside that same value system. One could, therefore, arrive at the falsity of Freeman's separation thesis of business and ethics from a different route.

Entrepreneurship

Entrepreneurship is particularly interesting in light of a new emphasis on sociotechnical systems and social

structures. New ventures (whether within existing organizations or in the creation of new organizations) are the vehicle for new artifact design and production and are the locus for Sclove's "engaged citizenry" who "must become critically involved with the choice, governance, and even design of technological artifacts and practices" (p. 139). Entrepreneurs are uniquely positioned to influence the design and deployment of new technologies. Not only do entrepreneurs shape the artifacts which are introduced to the market, but they are many times creating a new organization. During the development of their own codes of behavior within their new organization (Morris, et. al., 2003), the types of technologies adopted will help shape the subsequent behavior of the individuals within the firm by forming social structures.

Responsibility

Much of the literature has emphasized the responsibility of organizations in their development of technology. The developer, user, or consumer could be held accountable for maintaining social norms and values during technological change. Or, perhaps technology itself is accountable. Many (Di Norcia, 1994; Sirgy and Su, 2000; Yuthas and Dillard, 1999) have focused on the inherent inability of consumers to make knowledgeable decisions in the purchase of new technologies. Others (Poesche, 1998) focus on the social influences on organizations that adopt new technologies. In either case, the emphasis is on the organization to make correct decisions regardless of the technological influences. Individuals bounded by social and knowledge constraints – not by the features of existing and potential technologies – choose the technology adopted. However, once we acknowledge the influence of technology on organizations and individuals, the controlled development and design of technology becomes paramount within a corporation.

Values of technology

Finally, how do we talk about the values attributed to artifacts? Johnson (2000) has started examining the manner in which technology embodies values.

Through the history of an artifact's development (moral/metaphysical), the material form (material), and the social context (symbolic/expressive) technologies gain meaning in society. For example, some people attribute values to automobiles for the manner in which cars were developed over time, others for how fast it will go and where it will get them, and others for how a car will make them look in society. Are these exhaustive? Are there some values that are not interesting to business? We propose that all of the values are interesting and necessary in the story we tell of business.

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