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Common Sense and the Rhetoric of Technology

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> [The public good] justifies the use of language to bring about a *common* sense. –Loïc Nicolas, 2011

Keywords: Aristotle, common sense, *endoxa*, rhetoric, Chaim Perelman, Charles Taylor, Langdon Winner, technology.

Introduction

This paper is built on a theoretical foundation that draws close connections between rhetoric and technology. These relationships go beyond the observation that Aristotle considered rhetoric to be a *technê* (art) (Arist. *Rhet.* 1.1.). Rather, rhetoric and technology are similar in the fact that both *do things* in the world. I am specifically interested in how rhetoric and technology both rely on and potentially contribute to what can be seen as 'common sense.' In the pages that follow, I investigate several sites of change between classical and modern rhetoric, focusing on differences involving the concept of common sense (*endoxa*) in Aristotle. I argue that there are loci of change that mark the shift from the classical sense of *endoxa* as a rhetorical device to the recognition made by many modern rhetoricians that the truth is largely what we make of it.

It is worth noting at the outset that this clear-cut distinction between classical and modern rhetoric rests on somewhat shaky ground, as Andrea Lunsford and Lisa Ede make clear (Lunsford and Ede 1984). Lunsford and Ede cast doubt upon a commonly accepted dichotomy between classical (and especially Aristotelian) rhetoric and the modern rhetoric that began to emerge in the sixteenth and seventeenth centuries and came into its own in the twentieth (Lunsford and Ede 1984, 37-40). As Lunsford and Ede describe it, this dichotomy has rested on the notion that Aristotle viewed man as an animal motivated by reason, antagonistic only in his desire to persuade his audience. By way of contrast, modern rhetoric has been characterized by viewing people as symbol-using animals,

motivated by emotion and psychological proofs, with a rhetor-audience relationship that is aimed at dialog and communication (40). Lunsford and Ede argue convincingly that this dichotomy relies on an oversimplified reading of Aristotle's *Rhetoric* isolated from his other texts. However, Lunsford and Ede also make clear that there are several key differences between Aristotle's rhetoric and texts that draw from it, such as *The New Rhetoric* by Chaïm Perelman and L. Olbrechts-Tyteca.

One of these differences is found in the ways these respective rhetorics rely on epistemology:

> Rhetoric uses thought and language to lead to judgment (*krisis*) as the basis of action in matters of this world. And for Aristotle, that world of contingent reality, though itself in a state of flux, could be understood by systematic application of the intellect because that reality itself was thought to be informed by stable first principles.
>
> Modern rhetorical theory rests on no such fully confident epistemology, nor does knowledge enjoy such a clearly defined status. ... Hence, for the modern period, connections among thought, language, and reality are thought to be grounded not in an independent, chartable reality but in the nature of the knower instead (Lunsford and Ede 1984, 47).

In other words one key difference between Aristotelian and modern rhetorics is the amount of weight their respective epistemologies can bear.

Lunsford and Ede go on to note another distinction between classical and modern rhetoric: Modern rhetoric does not have the kind of "fully articulated theory" that Aristotle was able to offer in *The Rhetoric*. Instead, we rhetoricians of the twentieth and twenty-first centuries have relied on a multiplicity of theories, each working to reveal a small piece of the relationships about thought, knowledge, and language (47). One purpose of this paper is to investigate how technology factors into these relationships.

As such, I locate five sites of change that help shift from a classical epistemology to a modern one.[1] These sites of change can be found in 1) arguments based on *loci of quantity*, 2)

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[1] By "modern" I mean simply a rhetorical system that recognizes the dependence that knowledge has on the knower, as articulated by Lunsford and Ede above.

enthymematic arguments, 3) modern understandings of the relationship between common sense and truth, 4) Perelman and Olbrechts-Tyteca's universal audience, and 5) the philosophical concept of social imaginaries. My purpose is to tease out differences among these closely related rhetorical and philosophical concepts in order to shed light on their normative implications. "Common sense" influences the ways in which we see ourselves fitting into the world, as philosopher Charles Taylor points out (Charles Taylor 2002, 2004). Taylor offers the theoretical construct of "social imaginaries" to help describe the ways in which participants in a society shape and are shaped by the social structures around them. Insofar as these interactions are rhetorical, I see them as similar to the kinds of rhetoric that undergird Perelman and Olbrechts-Tyteca's concept of communion but as different in important ways from Aristotle's *endoxa*.

However, technology itself can be profoundly disruptive of common sense. In the second half of this article, I will demonstrate how the confrontation between technology and common sense differs between Aristotle's rhetorical theory and modern (especially twentieth century) rhetorical theory. One result of this conflict can be seen when technological change gives birth to new forms of common sense. As I will show in the final section below, this process becomes most clear if technology itself is seen through a critical lens. Andrew Feenburg's critical theory of technology offers just such a lens to focus on this process (Feenburg 2002). However, I also argue that rhetorical theory provides an opportunity to deepen the critical theory of technology offered by Feenberg.

Aristotle: Rhetoric, *Endoxa*, and Truth

Before beginning the main part of this article, it is worth reviewing some of Aristotle's fundamental ideas about rhetoric. I begin with this oft-cited passage from *On Rhetoric*: "Rhetoric may be defined as the faculty of observing in any given case the available means of persuasion" (*Rhet.* 1.2.1355b27-8). Aristotle considered rhetoric to be related to dialectic. However, it is clear that dialectic served a much more important role in Aristotle's mind; it could lead to knowledge (*epistēmē*) whereas rhetoric leads to persuasion (*pistis*). What's more, Aristotle makes a distinction between those kinds of rhetoric that draw on knowledge and those that are based on opinion: "For argument based on knowledge implies instruction, and there are people whom one cannot instruct. Here, then, we must use, as our modes of persuasion and argument, notions possessed by everybody [that is, *endoxa*]" (*Rhet.* 1.1. 1345a26-8). Later in this article I will discuss the relationship that Aristotle

sketches out between *endoxa* and the rhetorical device of enthymeme. For now it is sufficient to acknowledge that for Aristotle truth remained well outside the purview of rhetoric even though enthymeme and *endoxa* must draw on truth (or what seems to be true) in order to be persuasive. Thus, for Aristotle dialectic is an essential methodology that can be drawn on in the hopes of discovering truths, whereas rhetoric is at best a technique used to persuade.

Endoxa can be thought of simply as commonly held opinions, as Aristotle puts it in *The Topics*:

> In the case of scientific principles, there is no need to seek the answer of *why* but each of the first principles is persuasive in and of itself. Generally accepted opinions [*endoxa*], on the other hand are those that seem right to all people or most people or the wise (Arist. *Topics* 1.1.100b18).

Further, Aristotle sees in humans an innate ability to find *endoxa* that are more or less true:

> For the true and the approximately true are apprehended by the same faculty; it may also be noted that men have a sufficient natural instinct for what is true, and usually do arrive at the truth. Hence the man who makes a good guess at the truth is likely to make a good guess at what is reputable [that is, at *endoxa*] (*Rhet* 1.1.1355a14-18).

This makes it clear that although "rhetoric is the counterpart of dialectic" (*Rhet*.1.1.1354a1), Aristotle's vision of rhetoric is largely concerned with persuasion. At best rhetoric should attempt to rely *on truth* to persuade audiences to act in accordance *with* truth.

Rhetoricians since at least the twentieth century have found the line between opinion and truth to be much less distinct. Without going so far as to claim the non-existence of the material world, theorists such as Perelman and Olbrechts-Tyteca have found truth to be more the product of human communication and rhetoric than Aristotle likely would have allowed. Indeed, Perelman and Olbrechts-Tyteca see their project as taking up this thread: "Here is resumed the age-old debate between those who stand for truth and those who stand for opinion, between philosophers seeking the absolute and rhetors involved in action" (27). This debate in turn leads them to a "distinction between *persuading* and *convincing*" (Perelman and Olbrechts-Tyteca 1969, 27). In other words, whereas Aristotle saw Truth as something that the rhetorician must lean

on in order to persuade, Perelman and Olbrechts-Tyteca draw a close connection between generally held opinion and those things that are eventually held to be true.

Locus 1: *Loci of quantity*

Loci of quantity provide the first place to look for a change in the relationship between rhetoric and the truth found in common sense. According to Perelman and Olbrechts-Tyteca, *loci of quantity* provide a connective tissue binding opinion and truth. Simply put, an argument resting on a *locus of quantity* relies on the power of numbers to be persuasive—that is, something that is good for many is generally thought to be persuasive to all. Indeed, Aristotle himself considered *loci of quantity* in *Topics*, as Perelman and Olbrechts-Tyteca point out: "Aristotle mentions some of these *loci*: a greater number of good things is more desirable than a smaller" (Perelman and Olbrechts-Tyteca 1969, 85). Indeed, Perelman and Olbrechts-Tyteca argue that these kinds of proofs lie at the heart of many modern notions of self-rule and even what comes to be counted as "truth" itself:

> A *locus* of quantity, the superiority of that which is accepted by the greater number of people, forms the basis of certain conceptions of democracy and also conceptions of reason which equate reason with '*common sense*.' Even which certain philosophers such as Plato contrast truth when the opinion of the greater number, it is by means of a *locus* of quantity that they justify the preference they accord to truth, for they hold it to be something commanding the assent of all the gods, something which should win the assent of all men (Perelman and Olbrechts-Tyteca 1969, 86–7).

Regarding the relationship between *loci of quantity* and truth, Perelman and Olbrechts-Tyteca point to the notion of *durability* (which is quantitatively based on the amount of time something will last): "The quantitative *locus* of durability justifies also the high values attached to truth as being that which is eternal in contrast to opinions, which are passing and unstable" (87). Contrast this with Descartes, who viewed "good sense" as "the power of judging aright and of distinguishing truth from error" (Descartes 1994, 3). Descartes saw good sense, or reason, as being distributed in equal shares among all people. The reason people disagree is not that some people have more reason than others, but that "We conduct our thoughts along different ways and do not fix our attention on the same objects" (Descartes 1994, 3). Implicit in this view of reason is the assumption that truth itself lies outside of the ways in

which we reason about it. Some of us may find truth by using reason well; others may not. But Truth itself is always external to the seeker.

Unlike Aristotle and Descartes, Perelman and Olbrechts-Tyteca maintain that truth is not external to rhetoric—instead they place truth directly in the hands of the rhetor. In other words, to be considered true a thing need only be thought of as true by the greatest number of people for the greatest amount of time. Rhetors concerned with opinion are therefore directly involved in crafting what comes to be held as true.[2]

Of course, Perelman and Olbrechts-Tyteca were not the first scholars to question the notions of an external Truth. To take one eighteenth-century example, Giambattista Vico critiqued the Cartesian methods of inquiry that were prevalent in his time, arguing that an over-reliance on these methods had led to a neglect of ethics and rhetoric:

> Since, in our time, the only target of our intellectual endeavors is truth, we devote all our efforts to the investigation of physical phenomena, because their nature seems unambiguous; but we fail to inquire into human nature which, because of the freedom of man's will, is difficult to determine (Vico 1990, 720).

Vico's solution, at least for those interested in political topics and human affairs, was to forgo the study of nature for the study of debate and rhetoric.

Michel Foucault takes a similar tack in his description of the role that language plays as part of the epistemic warehouse: "All knowledge is rooted in a life, a society, and a language that have a history, and it is in that very history that knowledge finds the element enabling it to communicate with other forms of life" (Foucault 1970, 372). According to Foucault, as also Vico, language's role in the epistemic warehouse is rooted in custom and the human mind:

> Having become a dense and consistent historical reality, language forms the locus of tradition, of the unspoken habits of thought, of what lies hidden in a people's mind;

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[2] This should come as no great surprise to readers of modern rhetoric, especially work that has been done in the past three decades on the rhetoric of science. Gross (1990) and Latour & Woolgar (1986) are excellent examples.

> it accumulates an ineluctable memory which does not even know itself as a memory (Foucault 1970, 297).

Setting aside the Foucauldian mystery of how language could involve itself in "unspoken habits of thought," the key insight is clear. In fact, it is reminiscent of an observation offered by Lewis Mumford that the mind is something different from the brain, and quite impossible without language (Mumford 1967, Chapter 2). The crux of Foucault's project in *The Order of Things* is to explain how rhetorical changes have impacted that epistemic warehouse. Foucault claims that before the modern era, language and knowledge were centered on categorizing and taxonomies. Indeed, Foucault insightfully points out that categories rely on the natural ambiguity of language, since a perfect one-to-one naming system would be completely meaningless. In other words, language is not simply about naming things; language concerns itself with putting like with like and thereby attempting to understand differences (Foucault 1970, 96–103). However, Foucault argues that during the modern era, language (and consequently knowledge) moved from taxonomies to grids: "The centre of knowledge in the seventeenth and eighteenth centuries is in the table" (75). This reflects changes in writing and even printing technologies; it is easier to communicate using grids and tables if these devices can be reproduced consistently. In essence, these rhetorical changes impact the nature of knowledge itself—changes in language and writing affect the way that knowledge is discovered, understood, created, and transferred.

Locus 2: Enthymeme

A second locus of change between ancient and modern rhetoric as they bear on in the relationship between rhetoric and common sense can be found in shifting understandings of enthymeme. Enthymeme, at its core, is a rhetorical argument in which one or more premises or the conclusion has been left unstated. [3] The classic example of enthymeme is as follows:

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[3] Some scholars have rightly cast doubt on this tidy, long-standing definition. M. F. Burnyeat, for example, argues that Aristotle did not intend for the definition of enthymeme to be so heavily pinned to whether premises are explicit or implied. Instead Burnyeat contends that Aristotle saw enthymeme and rhetorical syllogism—which he distinguished from the logical syllogism—as much the same thing (as the citation from *Rhet* 1.1.1355a shows). The difference between rhetorical syllogism (or enthymeme) and logical syllogism can be found not in their nature of their premises but instead in their contexts (Burnyeat 1996,

1) Socrates is a man.
2) Therefore Socrates is mortal.

In this example, the unstated premise is "All men are mortal." Aristotle offers the enthymeme as one way to connect arguments with *endoxa*:

> It is clear, then that the technical study of rhetoric is concerned with the modes of persuasion. Now persuasion is sort of demonstration (since we are most fully persuaded when we consider a thing to have been demonstrated); the orator's demonstration is an enthymeme, [and this, in general, the most effective of the modes of persuasion]; the enthymeme is a sort of deduction ... : clearly, then, he who is best able to see how and from what elements a deduction is produced will also be best skilled in the enthymeme, when he has further learnt what its subject-matter is and in what respects it differs from the deductions of logic. For the true and the approximately true are apprehended by the same faculty; it may also be noted that men have a sufficient natural instinct for what is true, and usually do arrive at the truth. Hence the man who makes a good guess at the truth is likely to make a good guess at what is reputable (*Rhet* 1.1.1355a4-18).

For Aristotle, there is a clear relationship between enthymeme and *endoxa*: *Endoxa* are the source of the terms connecting enthymematic premises and conclusions. However even when dealing with enthymeme, Aristotle remains focused on truth as the most important ingredient in persuasion: "True and better ones [i.e., underlying facts] are by nature always more productive of good syllogisms [and by extension, good enthymemes] and, in a word, more persuasive" (*Rhetoric* 1355a12). Without access to the truth, the rhetor (as far as Aristotle is concerned) does not have much hope of being persuasive. In other words, for Aristotle, knowing the truth can help reveal more persuasive enthymemes, but not the other way around.

Lloyd Bitzer sheds light on the relationship between commonly held opinion and enthymeme in Aristotle's *Rhetoric* while strengthening the connection between dialectic and rhetoric itself (Bitzer 1959, 399-408). He surveys previous definitions of enthymeme and finds most of them lacking in one way or another. But

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98). Burnyeat makes it clear that rhetorical and dialectic arguments (whether they be labeled as enthymemes or syllogisms) are both dependent on *endoxa* for their premises.

building from these definitions and from the *Rhetoric* itself, he finds that definitions of enthymeme generally see it as something akin to a syllogism that deals with probabilities or signs while at the same time leaving some part of the argument unstated. Bitzer implies in his own definition that it is the unstated portion of the argument that gives rhetorical enthymeme its persuasive power: "The enthymeme is a syllogism based on probabilities, signs, and examples, whose function is rhetorical persuasion. Its successful construction is accomplished through the joint efforts of speaker and audience, and this is its essential character" (Bitzer, 1959, 408). In other words, the unstated premises in an enthymeme are similar to the questions used in dialectic: both allow the audience to fill in crucial parts of the interaction based on their own opinions and beliefs. This has become especially important as rhetoric has moved from oratory into writing. However, Douglas Walton, far from seeing this as a strength of enthymeme, considers it to be "the problem with enthymemes":

> If given carte blanche to fill in any proposition needed to make the inference structurally correct, we may insert assumptions...that the speaker or audience didn't realize were there, doesn't accept, or didn't even mean to be part of the argument (Walton 2001, 94).

Nevertheless, Walton offers his own description of the way enthymeme often functions in rhetoric: "In rhetorical persuasion, it seems that eikotic or plausibilistic arguments are frequently combined with arguments that have nonexplicit premises or conclusions" (99).

After analyzing a number of enthymematic arguments, Walton helps shed light on the connection between enthymeme and *eikos* or probability:

> A common basis for many of the enthymemes above is found in propositions that are relied on as acceptable assumptions that need not be explicitly stated because they can be taken for granted as holding on the basis of common experience, or common understanding of the way things normally work in familiar situations (Walton 2001, 104).[4]

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[4] As an example, Walton also offers the following argument: "*Rise e bise* (rice and peas) is often listed on menus among the soups, and some gastronomic writers dare to call it one. Nonsense! It is served with a fork. Who ever heard of eating soup with fork?" (Walton 2001, 102, citing Root 1990). Walton breaks down the enthymeme in this example more quite

In other words, enthymemes need not explicitly state those premises that are anchored in common sense. They are already there, in the spirit (*en-thumos)*. It is this reliance on common sense and the relationship between common sense and commonly held opinion (that is, between enthymeme and *endoxa*) that interests me, especially as both concepts become anchored in technological choices. In the following section, I attempt to make clear some connections between common sense and rhetorical facts and truths.

Locus 3: Common Sense, Facts, and the Truth

A third place where modernist rhetoric has shifted towards the epistemic can be found in the relationship among common sense, facts, and truth. It is just here that technology comes on stage. This is important to an understanding of how rhetoric in turn shapes technology because of the tendency that successful technologies have of becoming ubiquitous—and then invisible. Our understanding of technological progress becomes interwoven with our understanding of the way things are. Historical choices that have been made along the way fade into imperceptibility.

An example of technology taking a common sense place in our lives is my choice of a tool with which to write early versions of this article. Having grown weary of word processors crashing and inconsistent formatting of text, I chose the LaTeX markup language. Several colleagues have told me that I was crazy, since writing in LaTeX looks more like computer programming than word processing and would require a heavy learning curve. One person said, "There is a reason everyone uses Word: It's better!" The consensus was that I was defying *common sense* by forgoing the ease of writing in a graphical word processor such as Microsoft Word or OpenOffice (See Figure 1). Below, I outline the basis for such notions of common sense, arguing that they are essentially found in rhetorically constructed notions of Truth.

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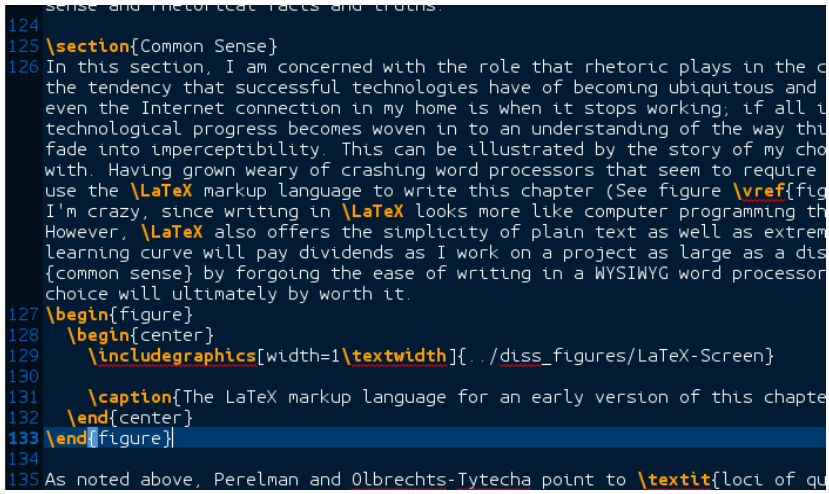
clearly as, "If something is served with a fork, and nobody eats soup with a fork, then what was served is not a soup" (102).



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124
125 \section{Common Sense}
126 In this section, I am concerned with the role that rhetoric plays in the c
    the tendency that successful technologies have of becoming ubiquitous and
    even the Internet connection in my home is when it stops working; if all i
    technological progress becomes woven in to an understanding of the way thi
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    learning curve will pay dividends as I work on a project as large as a dis
    {common sense} by forgoing the ease of writing in a WYSIWYG word processor
    choice will ultimately by worth it.
127 \begin{figure}
128   \begin{center}
129     \includegraphics[width=1\textwidth]{../diss_figures/LaTeX-Screen}
130
131     \caption{The LaTeX markup language for an early version of this chapte
132   \end{center}
133 \end{figure}
134
135 As noted above, Perelman and Olbrechts-Tytecha point to \textit{loci of qu
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Figure 1: The LaTeX markup language for an early version of this article.

As noted above, Perelman and Olbrechts-Tytecha point to *loci of quantity* as the justification given by philosophers since Plato for their preference for Truth over mere opinion, since Truth is "something commanding the assent of all the gods, something which should win the assent of all men" (Perelman and Olbrechts-Tyteca 1969, 86–7). They base this insightful observation at least in part on the following passage from Plato's *Phaedrus*: "A moderate man does not put himself through this labor [of constructing speeches] in order to speak and act in the company of human beings, but to put himself in a position of saying what is gratifying to the gods" (273e). However, in the modern world Perelman and Olbrechts-Tyteca describe an attachment to truth that is unconditionally bound to the assent of other people, or at least to any such assent that can be constructed by the rhetor. Note that this is distinct from Aristotle's use of dialectic to discover first principles. In Aristotle's version, truth exists somewhere, waiting for men to discover it. For Perelman and Olbrechts-Tyteca, truth is bound up in how rhetors construct their audiences.

Similarly, rhetoricians have long argued that facts are the constructions of speakers and writers. Poovey describes the ways in which the Renaissance innovation of double-entry bookkeeping helped move the production of knowledge from speaking to writing (Poovey 1998, 29-91). She argues that the writing of the emerging mercantile class contributed to a change in what was understood to be a fact: "Mercantile writing—both double-entry bookkeeping and mercantile accommodation more generally—played a greater role in the transition from the old status hierarchy to modern, functionally differentiated domains than historians have typically acknowledged" (Poovey 1998, 91). Poovey traces this shift to the modern reliance on statistics as a tool for understanding the natural

world. However, she acknowledges that this shift did not come about without philosophical challenges and difficulties:

> As long as one assigned the phenomena of nature—or even more questionably an abstraction like the economy or society—the kind of prominence that Bacon had done, it was impossible to any method *except a mathematical one* for moving from observed particulars to general principles (Poovey 1998, 317, emphasis in original).

Not only are facts drawn from the social and material worlds reliant on the ways people write about them for their existence, but the shift from hierarchy and taxonomy to statistics and mathematical tables enables a transition from deduction to induction. Individual details, when observed *en masse*, can be assembled into an understanding of the greater whole.

Perelman and Olbrechts-Tyteca reveal a more rhetorical stance in their discussion of facts and truths. Indeed, they tend towards social construction. For example, they claim that "it is not possible [to]…classify this or that concrete datum as a fact" unless "we can postulate uncontroverted, universal agreement with respect to it" (Perelman and Olbrechts-Tyteca 1969, 67). Of course, the authors do not reject the existence of facts themselves, but rather point to the ways that facts emerge amid the various forces of argumentation and persuasion. In other words, speakers and writers deploy facts that are much like the controversial concept of the universal audience in that the "facts" we argue with are constructions of our own making. This does not mean that basic facts do not exist outside of our argumentation. For example, it is fact that water freezes at zero degrees Celsius. But when I deploy that fact in an argument, I rely on it as a construction of what I assume my audience will *grant* as a fact. This must be so, because I cannot actually *know* what my audience takes as fact.

In "Act and Person in Argument," Perelman and Olbrechts-Tyteca provide an anecdote that makes clear the tenuousness of even seemingly self-evident facts. They relate a tale from John Locke that illustrates the extent to which well-accepted facts must be accommodated to the audience:

> It happened to a Dutch ambassador, who entertaining the king of Siam with the peculiarities of Holland…amongst other things told him "that the water in his country would sometimes in cold weather be so hard that men walked upon it, and that it would bear an elephant if it were there." To which the king replied "hitherto I have believed the strange things you have told

> me, because I look upon you as a sober, fair man: but now I am sure you lie!" (Perelman and Olbrechts-Tyteca 1951, 263).

The Dutch ambassador wrongly assumed he was addressing a universal audience as he explained the "fact" of water freezing.

Perelman and Olbrechts-Tyteca make it clear that the relationship between the universal audience and rhetorical facts is always an intimate one: "The way in which the universal audience is thought of, and the incarnations of this audience that are recognized, are thus determining factors in deciding what, in a particular case, will be considered a fact" (Perelman and Olbrechts-Tyteca, 1969, p. 67). To put this in the proper context, it is crucial to bear in mind that the universal audience as conceived by Perelman and Olbrechts-Tyteca is itself a construction of the author, thus certainly any "concrete datum" held as fact by the audience must also be a construction.[5] In this way, the emergence of facts can be seen as the result of dialectical tension between the rhetor and the audience. But since both speaker and listener are rhetorical constructions, all of the tension is internal to the rhetor him or herself.

However, this is not a process of arguing to determine what the facts are. According to Perelman and Olbrechts-Tyteca: "A fact loses its status as soon as it is no longer used as a possible starting point, but as the conclusion of an argumentation" (Perelman and Olbrechts-Tyteca 1969, 68). Note that this flies in the face of Aristotle's observation that facts are not generally the subject of arguments (*Rhetoric* 1.4, 1359a40-1359b2). As far as Perelman and Olbrechts-Tyteca are concerned, we most certainly *can* argue about facts, but if we do, the facts lose their facticity. In this, Perelman and Olbrechts-Tyteca are much closer to Latour and Woolgar (1986, see especially pages 151-186), who come to a similar conclusion regarding the status of scientific facts. In other words, arguing about what counts as a fact is not the same as arguing about the facts of a particular case. The latter is simply an exercise in figuring out which facts to pay attention to and which ones to ignore. The former plays a role in determining whether a datum (e.g., the freezing point of water or the number of planets in the solar system) counts as a fact at all.

Perelman and Olbrechts-Tyteca divide those things that have gained traction as facts into two groups: "Accepted facts may be

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[5] In this way the Universal Audience is just like any other audience (*a la* Ong (1975)).

either observed facts—this is perhaps the case for most premises—or supposed, agreed facts, facts that are possible or probable" (Perelman and Olbrechts-Tyteca 1969, 68). The authors also provide a helpful connection between facts and truths: "The term 'facts' is generally used to designate objects of precise limited agreement, whereas the term 'truths' is preferably applied to more complex systems relating to connections between facts" (68–9). Thus even those things commonly understood as "Truths" in reality are built on a foundation of context-specific rhetorical moves and constructed audiences seen as universal by the speaker.

Locus 4: The Universal Audience

Perelman and Olbrechts-Tyteca's universal audience provides a fourth theoretical place to aid in the creation of epistemic common sense. The concept of the universal audience has long been controversial. For example Ede criticizes the concept for its apparent reliance on the rationality of the audience, while Gross and Dearin dispute this weakness, since rationality, like the universal audience itself, remains a construction of the speaker (Ede 1989; Gross and Dearin 2003, 31-42). Perelman and Olbrechts-Tyteca claim that the universal audience

> refers of course…not to an experientially proven fact, but to a universality and unanimity imagined by the speaker, the agreement of an audience which should be universal, since, for legitimate reasons, we need not take into considerations those which are not part of it (Perelman and Olbrechts-Tyteca 1969, 31).

Clearly, this statement will ring critical alarm bells among post-modern readers. However, the concept of the universal audience need not be read as a permission slip to exclude members from audiences. Instead, Perelman and Olbrechts-Tyteca's project is a twentieth century attempt to update notions and sensibilities drawn from classical rhetoric; it seems unfair to criticize a modern project for its inherent modernity.

More recently, Loïc Nicolas sees the relationship that the universal audience creates between the speaker and his or her constructed audience as a helpful point of transaction between rhetoric and dialectic:

> I believe that this idea [i.e., the Universal Audience] gives meaning to the parallel between rhetoric and dialectic. Addressing the universal audience amounts to debating with oneself, that is, to undergo the necessary

> trial of contradiction and justification allowing for no possible loophole" (Loïc Nicolas 2011, 52).

That said, it seems clear that the rhetorical concepts outlined above rest on a foundation of perceived common sense. Indeed, one function of rhetoric is to reinforce that very foundation.

Locus 5: Social Imaginaries

A fifth locus of change that helps us identify differences between ancient and modern rhetoric offers an understanding of what constitutes common sense that helps explain those aspects of the social world that depend entirely on the belief and participation of many individuals. This is the concept of social imaginaries put forth by Charles Taylor. In "Modern Social Imaginaries," Taylor suggests a way of looking at the ways in which people see themselves forming and taking part in society (2002). In Taylor's words, a social imaginary is "the ways in which people imagine their social existence [and] how they fit in with others" (Taylor 2002, 100). It is important to note that this notion is both normative and dialogic. For example, Taylor suggests that the economy functions as a social imaginary. The economy is normative in that everyone must participate in some way—it is exceedingly difficult, if not impossible, to opt out completely. However, the economy is also affected by the actions and beliefs of all of the people that participate in it.

Taylor provides numerous examples in his book-length treatment of the topic, *Modern Social Imaginaries* (Taylor 2004). For example, Taylor points to practices such as democratic elections as relying on social imaginaries:

> Part of the background understanding that makes sense of our act of voting for each one of us is our awareness of the whole action, involving all citizens, each choosing individually but from among the same alternatives, and the compounding of these microchoices into one binding, collective decision (Taylor 2004, 24).

The validity of such choices relies on "our ability to identify what would constitute a foul: certain kinds of influence, buying votes, threats, and the like" (Taylor 2004, 24). In other words, the certain norms must be met in order for the election to count as an election.

The same can be said of other kinds of collective action, such as public demonstrations. Taylor argues that the very act of deciding to demonstrate for or against something "means that this act is already in our repertory. We know how to assemble, pick up

banners, and march" (Taylor 2004, 26). Those participating in something they know as a demonstration also have a sense of the physical boundaries implicit in the action, as well as what kinds of acts constitute a level of aggression that is too violent. In other words, if a demonstration crosses certain thresholds of space and violence, it ceases to be a demonstration and becomes something else—perhaps a riot.

Taylor maintains that social imaginaries are different from theories in that the former are "the [ways] ordinary people 'imagine' their social surroundings. ... [This] is often not expresses in theoretical terms; it is carried in images, stories, and legends" (Taylor 2002, 100). Social imaginaries are necessarily "shared by large groups of people, if not the whole society"; theories belong to an elite few (106). Nevertheless, theories do inform social imaginaries—by being taken up by other elites so that eventually even whole societies may believe in a theory, to the extent that it becomes part of "that common understanding that makes possible common practices and a widely shared sense of legitimacy" (106).

Although Taylor does not attempt to tie these notions to rhetoric in any explicit way, his focus on social imaginaries as informed by images, stories, and legends clearly helps align social imaginaries with rhetorical perspectives. For example, the "stories, images, and legends" of Taylor's social imaginaries are much the same as Aristotle's belief that human wisdom could be "preserved, if only partially, in the form of sayings, maxims, and myths" (Haskins 2004, 6)—in other words, through *endoxa*. Note also that Perelman and Olbrechts-Tyteca point to similar means for creating the communion that is crucial to epideictic rhetoric, a concept which I discuss in greater detail below. Additionally, Taylor's focus on the practices of participants further strengthens the ties between social imaginaries and rhetorical analysis.

It is worth noting that beyond simply being the stories we tell ourselves about society, social imaginaries are normative at their core. As Taylor puts it: "We have a common sense of how things usually go, but this is interwoven with an idea of how they ought to go" (Taylor 2002, 106). It is this aspect of telling us how things *ought* to be that connects social imaginaries with enthymemes, as demonstrated by Walton's example of enthymeme (i.e., "If something is served with a fork, and nobody eats soup with a fork, then what was served is not a soup" [Walton 2001, 102]).

Another example can be drawn from a recent Canadian bill that makes it illegal to wear a mask at a riot. As reported by the CBC, this bill "bans the wearing of masks during a riot or unlawful

assembly and carries a maximum 10-year prison sentence" (Fitzpatrick 2013, n.p.). The Canadian Member of Parliament (MP) who wrote the bill was cited as arguing that the measure would protect the public. The MP also claimed that the bill did not infringe upon civil liberties and would actually "help protect the legitimate right to protest because it will help prevent legitimate protesters from infiltrating a peaceful event and causing trouble" (Fitzpatrick 2013, n.p.). This position might be restated enthymematically, as "People who wear masks at protests must have violent intent, therefore we should not allow masks at protests."

An advantage of the concept of social imaginaries is that it lacks the ironclad inescapability of similar concepts such as ideology especially as expressed by Louis Althusser (2001). Social imaginaries as conceived by Taylor exhibit something of the quality of dialectic itself. People shape the practices that shape them. In this sense, social imaginaries such as the economy, democratic elections, or popular demonstrations can be viewed in much the same way as discourse itself.

Citing Anthony Giddens, Norman Fairclough calls this "the notion of 'duality of structure' " (Fairclough 2010, 38). Furthermore, Fairclough urges researchers not to ignore critical questions, since this means that power and status will also be ignored. Additionally, "the absence of a serious concern with explaining norms [will likewise result] in a neglect of power" (Fairclough 2010, 48). That is, analysis based solely in description will fall short of understanding the actions connected to and resulted from the use of language. It will not be able to account for the ethical implications of rhetoric. To guard against this neglect, Fairclough suggests researchers look for ways in which discourse shapes ideology. He calls such interactions between discourse and ideology "ideological-discursive formations" (30). Ideological-discursive formations (IDFs) work to "'naturalize' ideologies, i.e., to win acceptance for them as non-ideological 'common sense' " (30). Fairclough further argues that "naturalized ideologies and practices become part of the 'knowledge base'...and hence the 'orderliness' of interaction may depend on them" (Fairclough 2010, 37). Furthermore, this "micro" orderliness in turn comes to depend on "an achieved consensus in respect to ideological positions and practices" (37). In other words, the small ways in which we communicate perpetuate ideologies that are generated by social groups or classes, but which appear to be due to human nature. In essence, the relationship between ideology and discourse is dialogic, and this relationship is created and maintained by IDFs. Fairclough makes it clear that this duality applies to people as well

as their ideologies: "In preferring 'subject,' I am emphasizing that discourse makes people, as well as people make discourse" (41).[6] Therefore, despite being essentially normative, due to their inherent dialogic nature, social imaginaries can be changed by the words and practices of people that participate in them.

Finally, it is important to note that the Taylor's social imaginaries are essentially recursive. As Taylor puts it, "The social imaginary is not a set of ideas; rather it is what enables, through making sense of, the practices of society" (Taylor 2002, 91). An example of this recursiveness can be found in Habermas' description of the public sphere's use of political power to write constitutions to further stabilize its political power (Habermas 1991). Such documents re-inscribe themselves every time they are obeyed. Christopher Kelty extends and explicates this concept of recursiveness in his work on the practices that the free and open source software community used to understand and enable itself and its work (Kelty 2008). He describes a recursive public as "a public constituted around the technical and moral ideas of order that allow them to associate with one another" (Kelty 2008, 27). It is important to note that for Kelty, a recursive public is more than a community and the discourse it creates about itself. Kelty's definition insists on the inclusion of the technical structure that enables the making and modification of the community itself (Kelty 2008, 50). The technical structures that enable systems of innovation such as the patent system or open source software would thus fall under the purview of a recursively constituted social imaginary. However, it is clear that such structures and any social imaginaries they enable would amount to nothing without a community of people to make use of and participate in them.

Perelman and Olbrechts-Tyteca's *New Rhetoric* offers the concept of "rhetorical communion," which is one way speakers and writers participate in the creation and maintaining of the communities that are a prerequisite for social imaginaries. Graff and Winn provide a thorough analysis of this kind of communion (as well as Kenneth Burke's anticipatory notion of "consubstantiality"). Graff and Winn make clear that the sense of communion established by perhaps seemingly small instances of epideictic language is essential to the forming and maintaining of community:

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6 Although Fairclough is concerned with analyzing discourse, Berkenkotter and Huckin (1994) extend this concept to genre analysis.

> Acknowledging that every political community will consist of individuals and groups with competing interests and values, Perelman points to the sense of Communion cultivated in epideictic discourses as the factor that enables the community to confront or transcend internal divisions that threaten to fracture it (Graff and Winn 2011, 111).

Thus, communion is "in this its primary sense a…sociological notion" carrying with it ideas of "shared values as a source of social rapport and cohesion" that Perelman's mentor Dupreel also held dear (Graff and Winn 2011, 109).

In this sense, communion is also closely connected to less rhetorical concepts such as solidarity:

> The values promoted in any particular epideictic speech are presumed to command the assent of the audience addressed by the discourse, and as such, the discourse fosters a sense of solidarity or communal spring among the members of the audience who share those values [citing *The New Rhetoric*, pp. 48–53]. 'Communion' is the term Perelman and Olbrechts-Tyteca introduce to name this solidarity" (Graff and Winn 2011, 109).

Graff and Winn argue that this is essentially a "constitutive function for rhetoric," in the sense described by Maurice Charland (Graff and Winn 2011, 122; Charland 1987). Charland argues that a constitutive approach to rhetoric creates implications for an audience that are impossible in a theoretical approach focused on persuasion. Persuasion as a theoretical cornerstone "implies the existence of an agent who is free to be persuaded" (Charland 1987, 133).[7] Constitutive rhetoric on the other hand is concerned with the role that rhetoric plays in creating audiences as such. In other words, this is a rhetoric that a community uses to construct itself—not just to convince or persuade itself or some of its members.

Although Perelman and Olbrechts-Tyteca see communion as largely related to epideictic discourse, Graff and Winn argue that epideictic itself can be oriented towards the future rather than focusing solely on the present, as Aristotle would have it in *The Rhetoric* (1.3,1358b16-20). As Graff and Winn put it: "Epideictic, though celebrating values in the present, is oriented toward the future. The Communion it fosters is anticipatory and preparatory" (Graff and Winn 2011, 110).

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[7] Note that Charland relies on Burke's *Rhetoric of Motives* for his theoretical basis.

Finally, Graff and Winn point to three major methods for establishing communion, as described in *The New Rhetoric*:

1) Maxims and proverbs, which are centered on the values of the audience;
2) Allusion and quotation, which are also focused on values;
3) Inviting the audience to participate, which Graff and Winn suggest does not necessarily involve the values of the audience (114).

For the third method, Graff and Winn point to methods such as the oratorical question, but it is clear from the discussion of enthymeme above that unstated premises or conclusions can also be seen as an invitation to participate—especially in discursive situations that do not involve direct interaction with the audience. As noted, the first two methods rely on the supposed values of the audience being addressed.

Common Sense and Technology in Aristotle

We have moved through five loci of change that mark shifts between classical and modern epistemologies and how these changes affect rhetorical theory. However, in order to answer Fairclaugh's challenge and move from description into critique, it is necessary to look for the implications of these changes for the lives of people. One result of this shift is the modern relationship that people have with their technology. Later in this article, I will draw largely from the work of philosopher Andrew Feenberg (2002). But before moving to Feenberg's critical theory, it is necessary to revisit Aristotle once more in order to see how he himself dealt with the imperfectly recognized historicity of the relationship between technology and common sense. Following Lunsford and Ede's advice not to read *The Rhetoric* in isolation, I turn to the *Politics* to explore this topic.

In Book I of the *Politics*, Aristotle provides a largely teleological view of technology: "Everything is defined by its function and its capacity, and if it is no longer the same in these respects, it should not be spoken of in the same way, but only as something similarly termed" (Aristotle *Politics* 1.3.1253a23-25). In other words, an object can be defined by what it is supposed to do (its function) and how well it does it (its capacity). Aristotle applies this teleological definition of technology and to questions involving how and to what degree technology supports existing social structures.

In fact Aristotle saw clearly the potential new technology had to upset one of the social institutions that enabled his society to function: slavery.

> Every subordinate, moreover, is an instrument that wields many instruments, for if each of the instruments were able to perform its function on command or by anticipation, as they assert those of Daedalus did, or the tripods of Hephaestus (which as the poet says "of their own accord came to the gods' gathering"), so that shuttles would weave themselves and picks play the lyre, master craftsmen would no longer have need for subordinates, or masters for slaves (Aristotle *Politics* 1.4.1253a32-1254a1).

Note that from Aristotle's point of view, the idea of automatic machines that could free slaves from their toil was dystopic; he believed that most slaves were slaves because it was in their essential nature to be slaves: "That same persons are free and others slaves by nature, therefore, and that for these [i.e., those who are slaves by nature] slavery is both advantageous and just, is evident" (*Politics* 1.6.1255a1-3). In other words, since slavery is an essential role for some people, machines that eliminate the need for those slaves would take away an essential part of their being. For Aristotle it was literally common sense to limit the incursions of technology into society.

Compare now Aristotle's vision of technology run amok with Langdon Winner's *Autonomous Technology* (Winner 1978). Like Aristotle, Winner was concerned with the consequences of a technological world that was becoming more and more automated. The result of automation in Winner's account would be to make humans subject to technology. As divergent as these two visions of autonomous technology are, they are the same in a crucial way: Both are concerned with the social ramifications that come along with technological advancement. However, whereas Aristotle worried that large-scale technological innovation would free the slaves, Winner's concern is that technology is making slaves of us all.

Feenburg's critical theory of technology recommends itself, in the first instance, because of how it deals with this question. Although he would obviously disagree with Aristotle's conclusions regarding technology and slavery, Feenberg does take a similar methodological approach to Aristotle; both offer a teleological approach to technology. For Feenberg this approach stems from the need to "[distinguish] between the critique of natural science and

the critique of technology" (Feenberg 2002, 174). To help make this distinction clear, Feenberg suggests investigating the outcomes of technology. By taking a teleological approach to the impacts that technologies have on people, communities, and the environment, one can apply a critical lens to technology. In the following section, I argue that rhetoric provides one entryway into such a critical approach to technology.

Changes in the Relationship between Rhetoric and Technology

I have discussed five loci of change in the pages above. I argue that these changes illustrate a shift in the relationship between rhetoric and truth. More recently, these loci have helped reveal the nature of the range of possible relationships between humans and technology. In this section I hope to shed further light on this relationship. Some definitions of technology enable us to see the relation between common sense and technology clearly, while others obscure it. I find helpful those definitions that also show how rhetoric figures in mediating the relationship between common sense and technology. I will proceed by attempting the deceptively difficult exercise of defining technology and by examining Feenberg's critical theory of technology in particular.

An Excursion Defining Technology If any attempt to flesh out the relationship between rhetoric and technology is to be successful, it is necessary to define the term "technology." In the age of smart phones and tablet computers, it may be tempting to think of technology as nothing more than the shiny device with a bright screen that you hold in your hand and use to post pictures of your dog to Facebook. However, even this tongue-in-cheek example points to greater complexity. The actual device you hold can do nothing without a long history of software development, systems and networks of mineral extraction to provide cobalt for the battery, and vastly complex interactions between telephone networks and the Internet—and this just scratches the surface of the social and technical systems required to make these devices work. Below I attempt to construct a working definition for technology that respects this complexity from a number of diverse scholars.

Thomas Hughes sees technology as a "creative process involving human ingenuity" (Hughes 2004, 3), and later as a "creative means to a variety of ends" (5). In other words, technology is the way humans deal with the material world. By focusing on the ends of technology, Hughes makes it clear that technology cannot be considered in isolation from the effects that it has on the social and

material worlds—on people and the environment. By way of comparison, Winner views technology as composed of a variety of sub-components. In this definition, technologies can be broken down into apparatuses such as individual tools or weapons, techniques (that is, skills, crafts and other human activities), organizations, which Winner defines as technological social arrangements, and networks, that is, "large scale systems[s] that [combine] people and apparatuses linked across distances" (Winner 1978, 12). Like Winner, Hughes notes that machines can be connected into systems, but adds that systematization is often thought of as a dehumanizing force—think urban planning—while networks denote hope and human connections—think Vannevar Bush's vision for the Memex device (Hughes 2004, 97).

To help shed light on the difference between a technology and a machine, it is useful to turn to Bruno Latour and Lewis Mumford. Latour describes a machine as a device that holds otherwise disparate forces together: "This makes a machine different from a tool which is a single element held directly in the hand of a man or a woman. Useful as tools are they never turn Mr or Mrs Anybody into Mr or Mrs Manybodies!" (Latour 1987, 129). Similarly, Mumford claims that the first machine was the bow and arrow, which is the first human-made device to do more than simply extend the function of an existing organ (such as a club extending the function and force available in the naked human hand). Mumford also describes the systems of human capital and control used to build the pyramids as a "megamachine," which he justifies as more than just an "idle play on words" (Mumford 1967, 191). "If a machine be defined…as a combination of resistant parts, each specialized in function, operating under human control, to utilize energy and to perform work, then the great labor machine was in every respect a genuine machine" (191).

Feminist scholars such as Judy Wajcman point to the intrinsic connection between technology and human knowledge in order to show eventually how gendered technology has always been:

> "technology" is a form of knowledge....Technological "things" are meaningless without the "know-how" to use them. That know-how often cannot be captured in words. It is visual, even tactile, rather than simply verbal or mathematical. But it can also be systemized and taught, as in the various disciplines of engineering (Wajcman 1991, 14).

Wajcman notes the close connection between technology and action: "'Technology' also refers to what people do as well as what

they know.... A computer without programs and programmers is simply a useless collection of bits of metal, plastic and silicon" (14–15).

Wajcman further describes the realm of technology as one that has traditionally been dominated by men and as a result by male values: "As with science, the very language of technology, its symbolism, is masculine. It is not simply a question of acquiring skills, because these skills are embedded in a culture of masculinity that is largely coterminous with the culture of technology" (Wajcman 1991, 19). Wajcman is concerned with barriers that have prevented women from participating in the creation, shaping and steering of technology. However, she notes that mere access is no solution, due to fundamental disconnects between technology that has been dominated by male values and the potential for a truly 'feminist' technology—one that sees an elimination of patriarchy as an engineering goal of technology itself. In this sense, a feminist approach to technology would likely resemble the technological holism described by Feenberg (2002). Wajcman's insight is quite clear, especially in light of a rhetorical dispute such as "The Patent Wars"—the very label implies contestation and violence as well as a set of shared values and beliefs, set against technological and economic systems that favor "winners" over "losers" and tend to disregard value systems that do not align well with this perspective.

Taking into account all of these sources, I offer the following definition of technology:

Systems that involve creative combinations of tools, machines, processes, and/or people that are connected by networks with the purpose of making, creating, or changing things in the social and material worlds.

By combining the devices with their effects on the world, this definition calls for ethical considerations of technology. By this I mean that technology cannot be seen as an ethically neutral tool. As I have argued above rhetoric and technology have always been closely connected, even if people have not always seen those connections. But there also exists a rhetoric *of* technology. Charles Bazerman offers the following definition for this concept:

> [A rhetoric of technology] is the rhetoric that accompanies technology and makes it possible—the rhetoric that makes technology fit into the world and makes the world fit with technology. There is a dialectic between rhetoric and the material design as the technology is made to fit the imaginably useful and

> valuable, to fit into people's understanding of the world (Bazerman 1998, 385).

Bazerman's definition highlights once more the close, two-way relationship between rhetoric and technology—dialectic in Aristotle's terms, duality of structure in Fairclough's or Taylor's. By paving a road between people and technology, rhetoric plays an important role in transferring human values into technological creations and vice versa.

Values and Technology Technology is imbued with the values of the people that create it. Feminist scholars of technology have been aware of this for some time. For example, Wajcman discusses the technological architecture of the home as one that "uniquely revealing about prevailing social relations and norms of household organization" (Wajcman 1991, 110). The Victorian desire for a separation of the sexes and privacy (especially for the 'Master' of the house) gave way to more open architecture that—at least in theory—implied families that would share in the work of the home. Wajcman describes similar instances of values being laden into urban transportation infrastructure that favors the (traditionally) male bread-winner and his commute to work (pp. 126–135). Similarly, in her investigation into the absence of women from historical accounts of technical writing, Katherine Durack (1997) points to a crucial misstep in the way previous histories have viewed technology and women:

> The problem with regard to adding women to our disciplinary history lies in the assumption that *technology, work,* and *workplace* are gender-neutral terms. … But as the work of feminist historians and scholars demonstrate, such terms represent contested ground (Durack 1997, 250).

It is in these areas of contestation that values become embedded in technology.

Similarly, values are being designed into the size, shape, and design of mobile technologies.[8] Addressing such values is the central task that Feenberg (2002) has set out for himself. In the rest of this section, I outline three of Feenberg's core concepts: instrumentalism (which is essentially the notion that technology is

[8] For example, it seems an unlikely coincidence that the size and shape of a cell phone is about the same size and shape as a man's billfold—a form factor that potentially trades ease of use in order to easily fit in a pocket.

a neutral tool), substantivism (often described as technological determinism), and Feenberg's own critical theory.

The Instrumental Theory of Technology and Values Instrumental theory is the belief that technologies are nothing more than neutral tools, which people use to do whatever they will. Andrew Feenberg argues that this common-sense approach is the "most-widely accepted view of technology" (Feenberg 2002, 5). Furthermore, Feenberg argues that instrumentalism rests on the following five assumptions:

1) Technology is neutral in the same way that any "instrumental means" is neutral, and that technology is "indifferent to the variety of ends" it can be directed towards (2002, 5).

2) In addition to being indifferent to its outcomes, "technology...appears to be indifferent with respect to politics" (6). That is, discussions regarding the public good have little or no bearing on discussions of technological progress. The only place where the barrier between politics and technology is permeable involves discussions of cost.

3) Technology is deemed neutral because of its "'rational' character" (6). In other words, since science is seen as the product of a rational process, uncovering knowable things about the material world, technology—which is science applied to the material world—must also be neutral.

4) Technology is deemed neutral because of its "'rational' character" (6). In other words, since science is seen as the product of a rational process, uncovering knowable things about the material world, technology—which is science applied to the material world—must also be neutral.

5) Technology is seen as neutral because it "stands essentially under the very same norms of efficiency in any and every context" (6). If the focus is on measurements of efficiency, other ways of evaluating the effects of technology drop to the wayside. Social, cultural, and environmental costs (and benefits) are much harder to measure in terms of efficiency.

Although Feenberg's five points give an extremely helpful analysis of an instrumental view of technology, I believe that instrumentalism's most defining (and most insidious) feature is its connection to self-evidence or common sense. Instrumentalism is at

the heart of slogans such as "Guns don't kill people; people kill people." While this is true, it is also true that people build guns that kill other people. Instrumentalism makes it all too easy to gloss over this.

The Substantive Theory of the Technology and Values Substantive theory, on the other hand, places agency in technology itself: "Substantive theory...argues that technology constitutes a new cultural system that restructures the entire social world as an object of control" (Feenberg 2002, 6–7). Under substantivism, technology becomes more than one cultural factor among many that define the course of human development—it becomes the most important factor. The illogical but often fantasized conclusion of this argument is that technology will become autonomous and will ultimately control people as the means to fulfill its (i.e., technology's) own ends. Nightmarish scenes from any number of science fiction movies have envisioned the results.

A less imaginative but more realistic version of this theory can be found in *Autonomous Technology*, in which Winner describes the current state of Western technology as a conduit, "such that no matter which aims or purpose we decide to put in, a particular kind of product inevitably comes out" (Winner 1978, 278). Feenberg offers a relatively mundane example as illustration: As fast food has replaced the nightly practice of sitting down with family for dinner, "the unity of the family, ritually affirmed each evening, no longer has a comparable locus of expression" (2002, 7). This is not to say that fast food *causes* a decline in family life, but the correlation and mutual interaction between the two factors (that is, the rise of a technologically-based daily life and the simultaneous decline in family life) is significant. Feenberg reiterates that the substantive theory does not necessarily consider technology as run amok: "The issue is not that machines have 'taken over,' but that in choosing to use them, we make many unwitting commitments" (2002, 7). These commitments add up, amounting to a kind of technological determinism, in which technology determines the shape of society (and not the other way around).

Interestingly, there is a measure of 'common-sense' in substantive theory as well—when people speak of 'the march of progress,' they are often invoking a substantive view of technology. The implication is that technology will move forward in the direction that it has chosen, and people can only follow along or get out of the way.

Feenberg's Critical Theory of Technology and Values Feenberg's critical theory of technology requires that technology be thought of not as a thing, but rather as "an 'ambivalent' process of development suspended between different possibilities" (Feenberg 2002, 15). It is important to note that this ambivalence is not the same thing as neutrality: "This ambivalence of technology is distinguished from neutrality by the role is attributes to social values in the design, and not merely the use of, technological systems" (Feenberg 2002, 15). Note that this definition of technology is similar to the definition offered by Hughes who sees technology as a "creative process involving human ingenuity" and as a "creative means to a variety of ends" (Hughes 2004, 3, 5). The key parts of these two definitions overlap; technology is a process aimed at 'ends' in Hughes' definition and at 'possibilities' in Feenberg's. The goal of critical theory is to carefully deconstruct and evaluate technology and its relationship to those ends/possibilities, under the assumption that technology is a cultural construct shaped by the values and attitudes of the people that create it. Feenberg summarizes this relationship nicely: "Technology is a two-sided phenomenon: on the one hand, there is the operator, on the other, the object. Where both operator and object are human beings, technical action is an exercise of power" (16). By considering roles that technology plays in reconstituting relationships among people and things, Feenberg's theory makes it possible to account for the social and cultural values involved in the production of technology.

Conclusion

Aristotle's descriptions of *endoxa* and enthymeme, as well as Perelman and Olbrechts-Tyteca's notions of community and the Universal Audience, provide a solid foundation for understanding how rhetoric and texts work to create an aura of common sense. That common sense includes our understanding of technology. The philosophical work of Taylor and Feenberg provides helpful tools for teasing out the ways in which technology becomes "naturalized" into our lives—how it becomes invisible. This apparent invisibility arises not from anything inherent in the technology itself, but from the rhetoric of that technology—and how that rhetoric works to accommodate people to the technology. Indeed, in many ways, creating a sense of what is common is what rhetoric is all about. Only modern rhetorical theorists could have seen this. Aristotle could not.

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