Techne, Technology and Tragedy

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Introduction

This paper is an attempt to highlight some of the similarities and differences between ancient *techne* and contemporary technology within the context of tragedy. First, through an analysis of Thucydides' *History of the Peloponnesian War* and Sophocles' "ode to man" from *Antigone*, I show that the idea of complete technical control that we might only associate with contemporary technology is available in ancient conceptions of *techne*. However, I also show that, quite unlike current conceptions of technology, the ancients recognize things such as disease, natural disaster, and the wrath of the gods as limitations on complete technical control or the unrestrained application of *techne*. For the ancients, there is necessarily a tragic sense to all technical knowledge. Second, in reaction to Heidegger's appeal to recapture the original essence of *techne*, I suggest that if we were now to try to place limits upon, constrain or confine technology or if we were to try to return to a more ancient way of making and living with technical products, then we would also have to recapture or renew our lost connection with the tragic.

Altogether, this essay presents a third way to understand the difference between *techne* and technology outside of the usual "quantitative" and "qualitative" analyses. It may also serve as a sober realization for larger social and/or philosophical considerations of technology because it suggests a paradox: efforts to avoid dehumanizing technology might also require a return of tragedy.

Techne and Technology

Before engaging Thucydides and Sophocles, I will define and compare *techne* and technology more thoroughly because their meanings are neither clear nor univocal.

Generally, the ancient Greek word "*techne*" is translated as "craft" or "art" but also "knowledge". Of these definitions, "knowledge" seems best. "Craft" places emphasis on the finished product of an artisan or craftsman where *techne* really implies the knowledge by which those products were created. The same could be said for "art". However, just plain "knowledge" does not suffice because it applies to other terms such as *episteme*. While sometimes

used interchangeably, *episteme* means "scientific knowledge" and *techne* means "technical knowledge". Where *episteme* may be "knowledge for the sake of knowledge", *techne* is instrumental or oriented towards the deliberate production of something.[1] Furthermore, not only are products wrought via *techne* different from things produced by nature (*phusis*) but also from things produced by chance (*tuche*). So, *techne* is best translated as "technical knowledge" because it gives the specific sense of knowledge directed toward the production of something without confusing that knowledge with the product itself.[2]

Contemporary technology, on the other hand, most often refers to the product itself, instruments and machines (i.e. the computer *is* technology). However, the earliest uses of the word still describe a knowledge or systematic study of the arts (e.g. metalworking) rather than the products of that knowledge. So, at least by these definitions, *techne* and technology are quite similar if not the same.

However, it goes without saying that there are many things that distinguish the products of ancient *techne* from those of contemporary technology. The meager crafts of the ancient blacksmith and cobbler, for example, are hardly comparable to the computers and genetic engineering of today's technologists. This said, quantitative interpreters of technology do not find any essential difference between these two ways of making. In fact, they do not accept the distinction between *techne* and technology at all and instead present contemporary technology as the result of the accumulation and development of earlier, more primitive technologies. A good example of this quantitative distinction is the claim of anthropologists that such things as the stone chip spears or flints of early humans are the foundations for later and more complicated technologies. This type of interpretation is also available in other scholarly and academic approaches to technology. A. Emerson Wiens, a professor of Industrial Technology, begins his "Timeline of the Science and Technology Events Leading to Genetic Engineering" with the making of beer in Babylon at around 5,000 BC (1999). Dudley Shapere, from a philosophy and history of technology perspective, tries to apply an evolution theory normally associated with biology to the development of technology and declares that technology is as old as humankind (1998). Similarly, the International Technology Education Association, made up of technology educators, developers, administrators, academics, and corporate managers, points out that, "Technology has been going on ever since humans…harnessed fire, or dragged a stick across the ground to create a furrow for planting seeds, but today it exists to a degree unprecedented in history…Furthermore, technology is evolving at an extraordinary rate, with

new technologies being created and existing technologies being improved and extended" (2000, p. 2). This suggests that not only are present technologies the accumulated product of earlier advances but that future technologies will result from the continuation of that same process.

On the other hand, many contemporary theories of technology argue that there is in fact an essential or qualitative difference in the characters of *techne* and technology. The Canadian philosopher George Grant suggests that ancient *techne* had a limited role whereas technology is characterized by its complete lack of limitation (1986, esp. p. 11-13). Along the same lines, Stanley Rosen argues that *techne* is defensive whereas technology is offensive (1993, p. 73). Arthur Melzer proposes that rather than simply bringing something particular into being that would not have existed otherwise, as with *techne*, technology seeks to control nature as a whole (1993, p. 299).[3] For these thinkers, contemporary technology is not simply more complicated or of a greater scope and size than ancient *techne* but is fundamentally different.

Yet, as I will next show, Thucydides *History of the Peloponnesian War* and Sophocles' "ode to man" from *Antigone* clearly show that ancient *techne* strives to overcome the harshness of nature as a whole, is large in scale, offensive, and vast in its effort to control the "tireless," "unwearied" earth. If *techne* and technology share these characteristics, then the qualitative distinctions made just above are not acceptable. But, neither are the quantitative distinctions. Despite the similarity of scope and size of the technical achievements in Thucydides' history and the ode to contemporary technology, they ultimately fail to challenge successfully the primacy of nature (*phusis*) where technology succeeds. Unlike the enduring and permanent character of technology, both texts present ancient *techne* as fleeting, temporary and, as it will be explained, tragic.

Thucydides

Thucydides' *The History of the Peloponnesian War* is good illustration of both the great technical prowess of the ancient Greeks as well as the relationship between *techne* and the tragic. In Book I, the Corinthians explain to the Spartans,

> And it is just as true in politics as it is in any art or craft: new methods must drive out old ones. When a city can live in peace and quiet, no doubt the old-established ways are best: but when one is constantly being faced by new problems, one has also to be capable of approaching them in an original way (1.71).

Here, they are trying to convince the Spartans that, in the same way a craftsman must develop and adopt new methods to improve the quality and efficiency of his craft, their political leadership must find new methods to run their city and empire. They also warn that, if they fail to keep up with technical innovations, Sparta will be eclipsed and taken by a foreign power, Athens. They counsel, "An Athenian is always an innovator, quick to form a resolution and quick at carrying it out," whereas you, the Spartans, "…are good at keeping things as they are…" (1.70-1). So, "new methods must drive out old ones" and tradition must be sacrificed to innovation.

Yet, in the same book, the Corinthians also explain, "…war is certainly not one of those things which follow a fixed pattern; instead it usually makes its own conditions in which one has to adapt oneself to changing situations" (1.122). We might take this to mean that war demands innovation, new skills, contrivances, and arts while old thinking, ways, and traditions must be altered or left behind. However, it really means that because it does not follow a "fixed pattern" and "makes its own conditions", one can only have success in war for so long. There is a strange inevitability to the clash of Sparta and Athens that is beyond the power of either party to stop. As Thucydides concludes, "What made war inevitable was the growth of Athenian power and the fear which this caused in Sparta" (1. 23).

With this in mind, the war is an illustration of the success and power of the technical innovation of ancient peoples but also of *techne* as an invitation for the destruction or violence of nature. Although the conflict between Athens and Sparta is clearly its main subject, the violent movement of nature is the undercurrent of Thucydides' account. In a sense, nature is the third major combatant of the war.

For example, when the Peloponnesians are unable to overcome the innovative defences of the Plataeans, they try burning down the city and "produced such a conflagration as had never been seen before, or at any rate greater than any fire produced by human agency...comparable to one of the great forest fires on the mountains which have broken out spontaneously…" (2.77). But, despite the size and power of their effort, "a thunderstorm with a heavy fall of rain" puts the fire out. In another instances, a series of huge earthquakes turn back the Peloponnesians from an invasion of Attica. A tidal wave is triggered "which covered part of the city and left some of it still under water when the wave retreated, so that what was once land is now sea" (3.89). The best example of the destructive movement of nature is the plague at Athens. Importantly, it was the very innovative character of the Athenians

that brought the plague to them in the first place: "The plague originated, so they say, in Ethiopia in upper Egypt…In the city of Athens it appeared suddenly, and the first cases were among the population of Piraeus…" (2.48) Piraeus is the port city from which all Athenian trade and commerce centers. The disease, like the wealth of the city, came from the effort to destroy and conquer. Thucydides writes, "At the beginning the doctors were quite incapable of treating the disease because of their ignorance of the right methods…Nor was any other human art or science of any help at all" (2.47). The experts, the doctors, are unable to stop the disease and are themselves struck down. The plague is described as "beyond the capacity of human nature to endure" (2.50) and "so overwhelming that men, not knowing what would happen next to them, became indifferent to every rule of religion or of law" (2.52).

These three examples highlight how the war drove both the Athenians and Spartans to greater and greater technical heights. In each case, the unprecedented increase in human technical prowess is matched by the increase of nature's power. So, when in Book VI, the newly named commander, Alcibiades, asserts, "Remember, too, that the city, like everything else, will wear out of its own accord if it remains at rest, and its skill in everything will grow out of date; but in conflict it will constantly be gaining new experience…" (6.18) he is partly right. Yes, cities and men "wear out" on their own accord. But, as shown above, technical innovation does not change this certainty. Instead, the lesson is that the greater attempt to control nature, the greater the destruction. After all, the Sicilian Expedition that Alcibiades promotes in this same speech demanded all of the skills, equipment, and know-how of Athens but also led to the collapse of their empire.

Sophocles

While there is little doubt that we have been quite successful transforming (both human and non-human) nature into a resource, Thucydides' history indicates that there was no lack of effort on the part of ancient peoples to do the same. This is also the message of Sophocles' the ode to man (332-375).[4] In this first stasimon, the chorus sings of a world dominated by technical knowledge and its terrible consequences. They describe a place of constant creation and destruction—always innovating and driving forward, made by man but inhospitable and inhumane. The first three passages of the ode are a history of the technical evolution of man: i) inanimate nature is conquered; ii) animals are captured and trained to serve; and iii) society is ordered and cities are built. At each stage, man's control of nature expands. But, the

fourth and last passage marks an unexpected turn. Now, technical achievement is described as beyond expectation. *Techne* is revealed to be outside of human control — it produces things "beyond our hopes."

Stage 1: inanimate nature is conquered

The first line of the ode describes man as *deinos* or wonderful: "Wonders are many, and none is more wonderful than man." James Nichols highlights the multiple meanings of *deinos* in his translation, "Many are the things that are *deinos* [terrible, awesome, uncanny, clever], and nothing is more so than man" (1993, p. 30).[5] Being *deinos*, then, is not really praiseworthy but rather an expression of a certain power or capacity. The chorus portrays man as the most dreadful, clever, and resourceful thing in all of the world.[6] He is different. He stands out.

The remainder of the passage describes how "wonderful" man "wears away" three characteristics of the earth: the eldest (*hupertatan*), the immortal (*aphthitos*); and unwearied (*akamatos*).[7] *Hupertatan* implies both age and place or position. So, the ode describes how man destroys the old or given order to create something new that he leads and controls. *Aphthitos* literally means against "*phthino*," against decay. Man begins the degeneration of the earth. A similarly literal translation of *akamatos* gives us "without a sense of toil." By itself, *kamatos* implies sickness, pain, or tiredness and *kamno* means "to work." To overcome *akamatos* man works and toils (*kamnos*). He wears away (*apotruetai*) the soil as in *gen apotruesthai*, to vex constantly the earth by working it.

By the end of the first stage we are told that the development of agriculture has come at a great cost: the toppling of the natural order and the degeneration of the earth. This difficult give and take is the invariable result of all technical achievements.

Stage 2: animals are captured and trained to serve.

Man's conquests over the animals can be divided into two groups: i) those of which the primary aim is to kill or to capture—man uses nets for fowling (*ornithon*), hunting (*theron*), and fishing (*pontou phusin*); ii) those conquests which aim at reducing wild animals to man's service.[8]

In the first set of conquests, there is a new definition of man. He is not just *phrades*, shrewd, but has *periphrades*, an all around shrewdness. We might relate the "all around" nature of man's thoughtfulness, to Nichols' discussion

of *panourgia* meaning criminal or rogue. Literally meaning the temperament to do everything, *panourgia* suggests that when a citizen recognizes no limits, conventions, or laws he is a criminal. In a similar sense, the first conquests characterize human thoughtfulness as unbounded.

This carries onto the second set of conquests and a third definition of man. He is master or conqueror (*kratei*). Now, he is not simply the hunter of animals, but their master. Importantly, this mastery is achieved with *mechanai*, devices. *Mechanais* is from *mechos* which is "means, expedient or remedy" but also an instrument or machine for lifting weights. The devices, then, imply strength or, better yet, a remedy for inherent weakness. This is clear in his use of the yoke to tame *akmeta tauron*, the untiring mountain bull. Where before he was fearful or at the mercy of the bull, he now controls it. In this second stage, man becomes dependent on devices and mechanisms to maintain his control of beasts. Thus, the themes introduced in the first stage continue—the "untiring" is taken hold of, controlled, strapped down.

Stage 3: society is ordered and cities are built

Next, man teaches himself speech and has *astunomous orgas*, "the temperament to build and rule cities." Aristotle describes a similar relationship between language and the development of cities, "…language serves to declare…what is just and unjust...and it is association in [a common perception] of these things which makes...a *polis* (1958, II, ii, 11-12). But, the emphasis in the ode is different than in Aristotle's presentation. Rather than a natural impulse, the ode presents the temperament to build and rule cities as wrought out of man's dire situation: he is subject to the cold frost of winter and the lashing of rain. Hence, the city is not part of a natural progression or expression but an escape (*pheugein*).

For this, man is all-inventive (*pantoporos*). This new description fits well considering that *poros* refers to an artificial passage over a river, a bridge. So, the city is as a bridge going everywhere (*pan*), an artificial escape. This interpretation is warranted as the next line begins with the word *aporos* meaning without passage, as in when man does not have resources he can do very little. The one thing that man is unable to do, no matter what his resources, is *Haida pheuxin*, escape death. Inventiveness is clearly associated with escape: man can escape most of nature but not his own death.

Still, he delays death. He has escaped from disease or plague (*nosos*) with medicine. The last line of the third stage explains that these diseases were before *amechanon*, without device or resource for their remedy. We could

take this to mean that man's devices (*mechanon*) overcome *amechanon* in same way his work (*kamno*) overcame the "without work" (*akamatos*) earth or the way the yoke "tires" the untiring mountain bull in the first half of the ode. Now, human life itself is dependent on devices and medicines.

Stage 4: technical achievement beyond expectation

At this point, the history of technical achievements has concluded. In the fourth stage, man is cunning (*sophos*) in his craft (*mechanoen*). With his ingenuity, intelligence, and understanding he devises arts (*technai*) of a measure above or beyond (*huper*) expectation (*elipida*). For the first time it is suggested that technical knowledge (*techne*) is not necessarily under the steadfast control of humans. Instead, *techne* can produce either the bad or the good, the base or the noble, destruction or greatness. As the first three stages describe, man destroys the existing barriers to his activity: the earth, the beasts, the elements, and disease. Now, his inventiveness has almost no limit.

The chorus now warns, "When he weaves in the laws of the land, and the justice of the gods that binds his oaths together he and his city rise high — but the city casts out that man who weds himself to inhumanity thanks to reckless daring."[9] Only when man "weaves" divine and natural law into its texture, will the city foster human health, virtue, and happiness. The ode introduces weaving as remedy for the equivocal, paradoxical and amoral character of man's technical achievements. He progresses out of nature, is freed from the harshness of the elements, only to be subsumed by his own innovation. The chorus is suggesting a solution. Weaving natural law and divine justice into the texture of the city restores a limit or a boundary to human innovation while still allowing for an escape from the harshness of the natural elements. But, it seems odd that a weaver is called upon to repair damage done by earlier craftsmen. How is the weaver different from the sailor, farmer, hunter, and city builder mentioned in the first three passages of the ode?

The last lines of this passage provide something of an answer. The chorus hopes that good judgement (*phroneo*) will never be same (*ison*) as the thoughts of these craftsman. They do not want their judgement clouded by technical knowledge (*techne*) or, in a more general sense, technical knowledge should never be the same thing as or equal to (*ison*) good judgement. So, rather than *techne*, the weaver has good judgement. This is the character of our weaver rather than the cleverness, inventiveness, and cunning of the earlier craftsman. It remains unclear whether this is a new skill that man must learn or an old skill he must develop. The danger, however, is clear: when

good judgement is understood as technical knowledge, man is set for destruction—by his own hand, natural disaster, or the wrath of the gods.

This is the very thing that seals the fate of Creon, the new king of Thebes. He conceives of the city as a refuge from nature (Sophocles 1984, 189) and the citizenry as malleable matter to be moulded as he sees fit (293, 476-478, 569). Antigone, however, is portrayed as a force of nature (423-425, 712-717, 825-830), unwilling or unable to conform to his rigid rule. While the audience takes Antigone as the heroine and her uncle Creon as the villain, the ode to man cautions that neither of these extremes make for a good city or a good life but the need for a harmony or balance between them. To say the least, this is a lesson taught at a great price: lives lost and forever ruined.[10]

This is also a lesson common to many ancient works. The stories of Achilles, King Midas, Oedipus and many others remind us that there are tragic limits to human knowledge and activity. While the characters in these epics and tragedies dream and strive to win control of their fates, they all eventually learn that human beings are wrapped up in the enigmatic and unpredictable character or power of the natural world.

Heidegger

The return of this tragedy is a recurrent theme in eighteenth and nineteenth century German philosophy. For example, in the preface to *The Birth of Tragedy*, Friedrich Nietzsche explains that his study of tragedy is a "grappling with a crucial German issue—an issue situated at the very center of our hopes and aspirations" (1999, p. 16). In other words, for Nietzsche, a discussion of ancient tragedy is no mere historical or academic exercise but of great relevance to his present age. So, Martin Heidegger is certainly not the first philosopher to call for a return of the tragic. However, unlike his predecessors, Heidegger links tragedy and technology. He argues that because technology "enframes" the planet and everything on it we become cut off from an awareness of tragedy: the originary strife, the enigma of suffering, the transience or "movedness" of all nature including our own. As is evident in Thucydides and plays such as *Antigone*, the Greeks were aware of the essential place of the tragic in their daily lives and communities. It is this awareness that Heidegger wanted to recapture. It is not so much that technology eliminates tragedy but the fact we are unaware that tragedy is a defining characteristic of human existence even in the technological age.

Below, I will highlight why Heidegger argues that, because it is connected to the tragic, a return to ancient *techne* might serve as a response to the

enframing essence of technology. My intention here is not to discuss the larger place of tragedy in Heidegger's work. This has already been taken up by Reiner Schürmann (1993; 1994), William McNeill (1999), and Dennis Schmidt (2001). Nor do I intend to add to the already considerable scholarship on Heidegger's analysis of technology. While I will rely on literature from both of these areas and refer to these subjects, I intend to focus on Heidegger's idea that ancient *techne*, specifically pre-Platonic *techne*, engenders an awareness of the tragic whereas contemporary technology denies this awareness.

In Heidegger's interpretation of the ode to man in *Introduction to Metaphysics* (2000, 156-176), he flatly dismisses the quantitative view that the ode represents man's accumulation of technical prowess, isolation from or movement out of wilderness and into civilization. Instead, he explains it as an expression of the original relationship between man, technical knowledge, and nature. For him, sailing, hunting, and city building are not the beginnings of a control of nature or man's isolation from nature but rather the places or "scenes of disclosure" for the breaking in of the overwhelming (2000, 174).[11] That is to say, without sailing there could be no overwhelming force of the sea, without hunting there could be no overwhelming pain of hunger, and without the city and empire there could be no overwhelming force of war. As suggested above, the same analysis applies to the relationship between violence, disaster, destruction and Hellenic technical prowess depicted in Thucydides' account of the Peloponnesian war. We could also take the great wall of the Achaean's in Homer's *Iliad* as another example of this type of *techne*, "Built against the will of the immortals, The wall could not endure for long" (Book 12, line 10-11). The powerful wall is built only to be overpowered by the gods. It was built only to be destroyed and thus reveal the power of the gods. Clare Pearson Geiman explains that "Human activity as *techne*, then, is caught in a paradoxical necessity. On one hand, it must order the possibility and standards of justice and governance on a human level. On the other, it must respond to a higher ordinance that compels the continual destruction and reforming of such orders" (2001, p. 171). In other words, all forms of *techne* are caught in a tragic paradox – the technical imposition of order is the spur for the renewal of disorder.

In "The Self-Assertion of the German University," Heidegger calls this relationship between man, technical knowledge and nature "the original Greek essence of science" (1990, p. 473). While modern science is understood normally as a means to transform nature to serve human ends, Heidegger argues that the original Greek essence of science reminds us of our tragic impotence in the face of nature. While the *technai* discussed in *Antigone*, and

likewise those discussed by Thucydides, may allow a freedom from of mastery of nature's dynamic influence, there is no suggestion it is enduring. Far from it, it is a freedom that is fated to be unmade.

According to Heidegger, where ancient *techne* was a scene of disclosure for overpowering nature, contemporary technology invites no such disclosure. Put differently, the distinction between *techne* and technology is found in the difference between temporary and permanent imposition. This is why Heidegger celebrates pre-Platonic technical knowledge and laments the instrumental rationality of technology.

This division is discussed in somewhat clearer terms in *The Question Concerning Technology*. There, the ancient craftsman's art is described as a "bringing-forth", a working in partnership or co-operation with the nature of materials to construct an artifact, such as a chair or a house, while the contemporary technologist is described as "challenging-forth" or changing the nature of materials to make them stronger, more flexible, longer lasting, etc. For example, a doctor may "bring forth" the already available health of an individual through medicine whereas cloning or genetic engineering "challenge" the natural bounds of the body creating a wholly new "artifact" with different characteristics. As Heidegger details, earlier human inventions did not permanently impose a new form onto nature. Under normal conditions, because the material of an artifact was still bound by natural characteristics, nature would always "shine through" the imposition of the artist, craftsman or technician. A carpenter imposes the form of a chair onto wood but once the chair is finished that wood still maintains its natural characteristics to rot and decompose in the same way a fallen tree rots and decomposes on the forest floor. In other words, the craftsman's chair is a site of openness for the revealing of nature. And, because this revealing comes through an artifact, it is all the more stark and tangible. The rotting of our chair or our house is more significant to us than the decomposition of a dead tree.

In contrast, we might look to the growing list of contemporary technologies that do not co-operate with nature but attempt to replace it. A nuclear engineer can manipulate the structure of natural elements to produce artificial elements. Plutonium, for example, is designed to never abide by or return to the characteristics of the uranium from which it was derived. The character of plutonium (i.e. its level of radioactivity) is always artificial. Likewise, the genetically altered human is designed to never return to the natural characteristics of the material from which it was derived (e.g. a sick or weak body) and thus is always artificial.[12] In turn, contemporary technological artifacts do not disclose nature. And, because in a technological society so

much of our world is filled with these "undisclosing artifacts", we are cut off from, become unaware of, or forget the essential movedness or transience of existence. As Heidegger writes, "Enframing blocks the shining-forth and holding-sway of truth" (1993, p. 333).

But, why or how was this awareness lost? Heidegger describes how Platonic emphasis on the enduring and permanent character of the *eidos* narrows our conception of and relationship to nature (*phusis*). While I cannot in the short space of this essay explain the complexities of Heidegger's interpretation of Plato, I think it would be helpful to summarize his basic argument.[13] In *Introduction to Metaphysics* he asks, "But if that which is an essential *consequence* is raised to the level of essence itself, and thus takes the place of the essence, then how do things stand?" He continues, "What remains decisive is not the fact in itself that *phusis* was characterized as *idea*, but that the *idea* rises up as the sold and definitive interpretation of Being" (2000, p. 194). Heidegger explains that the idea or *eidos* is initially understood as the visible appearance of the "movedness" or "emerging power" of nature (*phusis*). In this way it is only a mere consequence of nature. However, Plato's "theory of ideas" comes to exalt the merely visible and, thus, "The visage offered by the thing, and no longer the thing itself, now becomes what is decisive" (2000, p. 195). From here, *phusis* as movedness is ignored in lieu of the superficial, unmoving *eidos*. *Eidos* becomes a *paradeigma*, a model or prototype rather than anything immediately apparent. Heidegger concludes, "Because the actual repository of being is the *idea* and this is the prototype, all disclosure of being must aim at assimilation to the model, accommodation to idea" (1959, p. 185).[14] Therefore, according to Heidgger, Plato's metaphysics contextualizes all knowledge as instrumental.

Under the reign of metaphysics, *techne* comes to express an effort to isolate things thought and made by humans from the influence of nature rather than being sites of openness or scenes of disclosure for overwhelming or overpowering nature. Now, *techne* no longer reveals nature but instead narrows it to raw material waiting for technical transformation. According to Heidegger, this turn lends itself to modern science, the objectification and manipulation of nature, technological thinking or "enframing" (*Ge-stell*). Where before *techne* could only toss man "back and forth between structure and the structureless, order and mischief, between the evil and noble" (1959, p. 161)[15] as described in *Antigone* and other ancient works, it could now transform, assimilate and accommodate the world to the model or prototype (i.e. the *eidos*).

From this point, the essence of technology begins to reveal itself as

something akin to contemporary technology. Although, there are still no "technologies" as such, the perspective by which technologies manifest has been established. It is simply a matter of time between the most basic products of instrumental thinking and global technology. For Heidegger, technical knowledge or *techne* is "a process of reflection" (1993, p. 218) that transforms the world because, through it, existence is assimilated to the technological model.

How then does Heidegger understand a return to ancient *techne* possible? How does he propose we overcome Plato's metaphysics? The answer can be found in the Rectoral address. He says, "The beginning exists still. It does not lie behind us as something long past, but is stands before us...The beginning has invaded our future; it stands there as the distant decree that orders us to recapture its greatness" (1990, p. 479). He includes a controversial translation of line 497d9 of Plato's *Republic* at the end of the address: "All that is great stands in the storm..."[16] Altogether, this suggests that our thinking, our building, our politics, and our art must be *episphales* (prone to fall and precarious) — not to protect against or hide from the collapse and confusion of Western metaphysics and the resulting civilization but to be scenes of disclosure, to usher in destruction as preparation for a "new beginning." Bear in mind his quotation of the words of Prometheus earlier in the same speech, "'But knowledge (*techne*) is far less powerful than necessity.' That means: all knowledge of things remains beforehand at the mercy of overpowering fate and fails before it" (p. 472). Heidegger's appeal to the fleeting and tragic character of technical knowledge suggests that we need not be beholden to any of the static traditions or institutions of contemporary science. Instead, he wants us to move away from an emphasis on the permanent imposition of form onto matter associated with technology toward the fleeting and tragic character of this *techne*.

Schmidt explains that Heidegger viewed tragedy as "the counterforce" to the stultifying affect of technology:

> Part and parcel to this call for a new beginning, for an overthrow of presumptions of metaphysics, is the sharp critique which is leveled against the final forms which metaphysics has taken: the reign of values and the ascendance of technology . . .Greek tragedy will provide the counterforce to this metaphysical sense of the elemental character of human being since...it will present a view of human being as fundamentally strange, as the opening to an abyssal and inconceivable freedom (Schmidt 2001, p. 240).

In the 1930s, Heidegger seemed to think that a return to tragedy required an immense planetary wide effort on the part of the German *volk*. He writes:

> Russian and America, seen metaphysically, are both the same: the same hopeless frenzy of unchained technology and of the rootless organization of the average man...The spiritual decline of the earth has progressed so far that people are in danger of losing their last spiritual strength, the strength that makes even to see the decline [which is meant in relation to the fate of "Being"] and to appraise it as such (2001, p. 40).

In saying this, Heidegger is arguing for a violent response "to recapture, to repeat" an existence unencumbered by the influence of technology. Indeed, it is fair to say that this aspiration led Heidegger to actively support National Socialism in the belief that it could destroy both the Russian and American forms of democracy which he described as political manifestations of technology and the legacy of Western metaphysics. As he explains in the *Der Speigel* interview of 1966, "At that time I saw no alternative."

Here, tragedy as counterforce took the form of world war. However, the so-called "late" Heidegger seems to move away from this type of violent call. In the same *Der Spiegel* interview, he concludes that now, "Only a god can save us." While this is far more passive then his pre-WW II position, it is no less violent. We need only think of catastrophic plague at Athens, the fates of Creon and Antigone, and the destruction of the Achaen wall, to recognize the violent character of Heidegger's saving god or, as it is described elsewhere, "saving power" (1993, p. 340). Tragedy remained at the heart of Heidegger's understanding of *techne* and technology to the very end.

Tragedy and our current understanding of technology

But, if a return to *techne* necessarily engenders tragic consequences, why should we want such a return?

There is no doubt that technology allows humans to control the harshness of nature and gives us the ability to satisfy our needs and mitigate suffering. However, as is suggested in the ode, when we are completely ruled by techne, we lose all connection to the natural order in lieu of the prescribed order of technical control. Considering this trade off, Martha Nussbaum writes:

> In a time of deep need, feeling that our very survival is at stake, we may turn ourselves over to a new art. Sometimes this art will simply

> do what we ask of it, providing efficient instrumental means to the ends that we already have. Sometimes, however...the art will so deeply transform ways of life that we will feel that it has created a new type of creature. If, then, we contemplate curing our current ethical diseases by a new art, we must imagine, as well, and with the utmost care, the life that we will live with this new art and the aims and ends that go with it. For we may not want a radical solution, if its cost will be to be no longer human. This would hardly count as saving our lives (1986, p. 106).

Without some "cure" human life would be harsh and at the mercy of the natural elements. But, with too much medicine, human life will lose all connection to nature. When left unchecked, our efforts to overcome "inhumane" disease and death result in dehumanization. Of course, this is the paradox of technologies such as genetic engineering. They seem to have unlimited potential to overcome disease and death and yet this cure may be at a cost we are unwilling to pay. Hence, we may choose to embrace strife and mortality over the alternative.

Conclusion

In conclusion, I think my analysis of these two texts highlights how *techne* and technology share the same characteristics. Yet, while ancient peoples may have attempted technical control of the planet and everything on it, their technical knowledge did not hold back the disclosure of nature. While their craftsman may have been able to bring-forth artifacts that would not have come into being otherwise, this was only done with the co-operation of nature. As is well illustrated by the violence of Thebes and the near annihilation of Athens, eventually all artifice, no matter how large, is overpowered or overwhelmed. Technology, on the other hand, does not work in co-operation with nature. Rather than being a scene of disclosure for overpowering nature, technology challenges nature, imposing a permanent form onto matter. It does not allow nature to "shine through" it. *Techne* and technology are distinguished in this way.

However, because we have overcome many of the traditional limitations on technical control and, therefore, have become disconnected from an awareness of the tragic, when technology does move toward dangerous and harmful ends, we have little idea of how to respond. Because there are fewer and fewer limits to technology, it seems to us unlimited, all encompassing, out of control, autonomous and thus different from ancient *techne*.

Obviously, we cannot expect the pantheon of ancient Greek Gods to rain down thunderbolts and stir up tidal waves to knock back the hubris of our making. At the very least, we should consider whether it is necessary to sacrifice what we have been given with what we will make.

Appendix 1:
Sophocles' "ode to man" from Antigone

[332] Wonders are many, and none is more wonderful than man. [335] This power spans the sea, even when
it surges white before the gales of the south-wind, and makes a path under swells that threaten to engulf him.
Earth, too, the eldest of the gods, the immortal, the unwearied, [340] he wears away to his own ends, turning
the soil with the offspring of horses as the plows weave to and fro year after year.

[343] The light-hearted tribe of birds [345] and the clans of wild beasts and the sea-brood of the deep he
snares in the meshes of his twisted nets, and he leads them captive, very-skilled man. He masters by his arts
[350] the beast who dwells in the wilds and roams the hills. He tames the shaggy-maned horse, putting the
yoke upon its neck, and tames the tireless mountain bull.

[354] Speech and thought fast as the [355] wind and the moods that give order to a city he has taught
himself, and how to flee the arrows of the inhospitable frost under clear skies and the arrows of the storming
rain. [360] He has resource for everything. Lacking resource in nothing he strides towards what must come.
From Death alone he shall procure no escape, but from baffling diseases he has devised flights.

[365] Possessing resourceful skill, a subtlety beyond expectation he moves now to evil, now to good. When
he honors (weaves) the laws of the land and the justice of the gods to which he is bound by oath, [370] his city prospers. But banned from his city is he who, thanks to his rashness, couples with disgrace. Never may he share my home, [375] never think my thoughts, who does these things!

Sophocles' "ode to man" from *Antigone* (Latin transliteration)

polla ta deina kouden anthrôpou deinoteron pelei.
touto kai poliou peran pontou cheimeriôi notôi 335

chôrei, peribruchioisin
perôn hup' oidmasin.
theôn te tan hupertatan, Gan
aphthiton, akamatan, apotruetai
illomenôn arotrôn etos eis etos
hippeiôi genei poleuôn.

kouphonoôn te phulon ornithôn amphibalôn agei
kai thêrôn agriôn ethnê pontou t' einalian phusin
speiraisi diktuoklôstois,
periphradês anêr:
kratei de mêchanais agraulou
thêros oressibata, lasiauchena th'
hippon ochmazetai amphi lophon zugôn
oureion t' akmêta tauron.

kai phthegma kai anemoen phronêma kai astunomous
orgas edidaxato kai dusaulôn
pagôn hupaithreia+ kai dusombra pheugein belê
pantoporos: aporos ep' ouden erchetai
to mellon: Haida monon pheuxin ouk epaxetai:
nosôn d' amêchanôn phugas xumpephrastai.

sophon ti to mêchanoen technas huper elpid' echôn
tote men kakon, allot' ep' esthlon herpei,
nomous gerairôn chthonos theôn t' enorkon dikan,
hupsipolis: apolis hotôi to mê kalon
xunesti tolmas charin. mêt' emoi parestios
genoito mêt' ison phronôn hos tad' erdei.

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[1] Bloom notes that *techne* is "a discipline operating on the basis of principles that can be taught. It is, hence, not opposed to science but allied with it…(Plato 1968, p. 443, Note 22).

[2] While something could be made of the etymological meeting of *techne* and *logos* (reason) in the modern word technology, the Greek sense of *techne* already implies the application of reason. Aristotle, for example, defines *techne* in the *Ethics* as "a state of capacity to make, involving a true course of reasoning (*logos*)" (Aristotle 1958, 1140a10). Carl Mitcham points to Aristotle's use of the word *technologia* in *Rhetoric*. However, he admits that its meaning is considerably different from the modern word "technology."

[3] Carl Mitcham describes *techne* as "fundamentally oriented toward particulars instead of toward the efficient production of many things of the same kind in order to make money" as is technology (1994, p. 123). See also William Lovitt's "*Techne* and Technology." *Philosophy*

Today (Spring 1980).

[4] See Appendix 1 for Sir Richard Jebb's translation of the ode to man as well as the Latin transliteration.

[5] *Deinos* comes from the root *deos*, meaning fear.

[6] Depending upon the context *deinos* can be any one or all of these things. For example, in Book 12 of Homer's *Odyssey*, *deinos* suggests something dreadful: "[235] For on one side lay Scylla and on the other divine Charybdis terribly [*deinon*] sucked down the salt water of the sea. Verily whenever she belched it forth, like a cauldron on a great fire she would seethe and bubble in utter turmoil, and high over head the spray would fall on the tops of both the cliffs." In Plato's *Apology*, *deinos* implies cleverness. Socrates is described by his accusers as being *deinos legein*, "terribly clever at speaking." And, in Herodotus' *The Histories* (ed. A. D. Godley), it suggests resourcefulness: "5.23. [2] Sire, what is this that you have done? You have permitted a clever and cunning [*denoi*] Greek to build a city in Thrace, where there are abundant forests for ship-building, much wood for oars, mines of silver, and many people both Greek and foreign dwelling around, who, when they have a champion to lead them, will carry out all his orders by day or by night."

[7] Most translations of the ancient Greek are made with the help of Liddell's and Scott's *Intermediate Greek Lexicon*.

[8] This division is made by Sir Richard Jebb's in his *Commentary on Sophocles: Antigone*.

[9] Translated by Robert Fagles. David Grene translates line 368 as "If he honors the laws of earth, and the justice of the gods he has confirmed by oath, . . ." Here, instead of "weaves" (*pareiron*), there is "honors" (*gerairon*). Richard Jebb argues that "weaves" is the proper word. He suggests that the similar *gerairon* came to replace the original *pareiron*. Also see Lloyd-Jones and Wilson (1990).

[10] Creon believed he could individually guide his city through its civil strife but his overconfidence resulted in calamity and sorrow (see especially Sophocles 1984, 1257-1300).

[11] For another discussion of the "the open" see Heidegger (1996, p. 91-92).

[12] For an excellent discussion of the relationship between art, technology, and nature see Glazebrook (2000).

[13] For a thorough consideration of Heidegger and Plato see Partenie and Rockmore (forthcoming).

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[14] Here, I rely Manheim's 1959 translation because it more clearly communicates the instrumental aspect of Platonic emphasis on *eidos*. In another consideration of the *eidos*, Heidegger explains that *phusis* no longer "...possesses the unique quality of delivering over to itself that which *through it* is first transformed from something orderable (e.g., water, light, air) into something appropriate for it alone (for example, into nutriment and so into sap or bones)" (1998, p. 227), but is conceived of as raw 'material'." Just as philosophy focuses on the visible, modern science "seizes upon the most extreme non-essence of fusis and inflates it into the real and only essence" (1998, p. 228). So, Plato's articulation of metaphysics marks a fundamental turn away from the tragic relationship with nature expressed in pre-Socratic sources.

[15] Again, I rely on the Manheim translation.

[16] Allan Bloom translates the same line as "For surely all great things carry with them the risk of a fall, and, really as the saying goes, fine things are hard." There is no mention at all of a "storm."