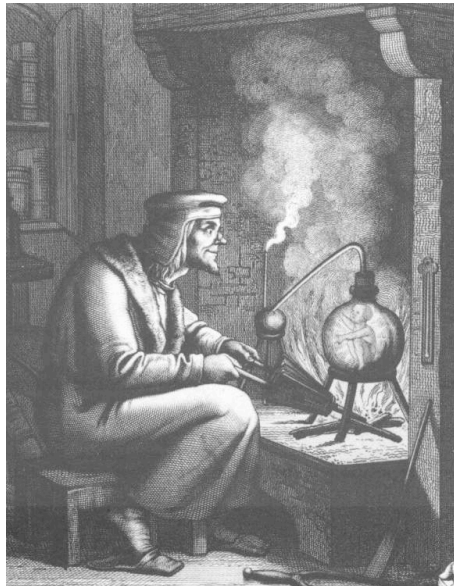


Doctor Faustus in the 21st Century

A meditation on knowledge, power, and civic intelligence

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Douglas Schuler, The Public Sphere Project and The Evergreen State College
2202 N. 41st Street, Seattle, WA 98103 US +1 206 632 1659 douglas@publicsphereproject.org

Abstract

In the medieval legend, Doctor Faustus strikes a dark deal with the devil; he obtains vast powers for a limited time in exchange for a priceless possession, his eternal soul. The cautionary tale, perhaps more than ever, provides a provocative lens for examining humankind's condition, notably its indefatigable faith in knowledge and technology and its predilection towards misusing both. A variety of important questions are raised in this meditation including *What is the nature of knowledge today and how does it differ from knowledge in prior times? What is its relation to technology and power? What paths are we heading along and which alternative ones are being avoided?* Not insignificantly, we also raise the issue of civic ignorance, including that which is intentionally cultivated and that which is simply a lack of knowledge. We also consider the identity of Doctor Faustus in the 21st Century and in a more material world like ours, what is the *soul* that he would lose in the bargain, and what damage might be done to Faustus and to innocent bystanders. Finally since people don't always live up to the terms of agreements they make, what, if anything, could Faustus do to wriggle out of the bargain, to avoid the loss of his all-important soul. Our response is not to disavow knowledge (as the implicit "lesson" of the original myth might suggest) but to shift to another approach to knowledge that is more collective and more responsive to actual needs of our era. This approach which we call *civic intelligence* is considered as a way to avoid the possible catastrophes that the Faustian bargain we've seemingly struck is likely to bring.

Key Words

Civic intelligence, civic ignorance, sociology of knowledge, technological critique, social construction of knowledge

Introduction: Doctor Faustus Then and Now

In the medieval legend, Doctor Faustus was a scholar who had come to the unhappy realization that his knowledge and pleasures were limited. To overcome the barriers that prevented him from enjoying the fruits so unjustly denied to him, Doctor Faustus struck a deal with the devil. Thus he obtained the vast powers he desired — *but at a very dear price*. After a brief time (24 years according to Marlowe) he was forced to relinquish a priceless possession: his eternal soul.

Although the legend is thought to have originated with a specific person, a Doctor Johann Georg Faust who lived in Germany around the turn of the 15th Century, the story has proved to be deeply resonant and has lived on over the centuries through numerous plays, novels, operas, artworks, puppet shows and other high and low cultural forms. Most historians now believe that there was an actual historical "Faust" at one point and that he roamed extensively performing magic and giving horoscopes wherever he went. He also was given to extravagant claims and was summarily denounced by the Roman Catholic Church for his alleged blaspheming and other sins.

But that was then and this is now. What, if anything, does the Faust legend tell us about our current situation? Other myths are certainly relevant. Frankenstein (and the Golem before that) bring up themes of tinkering with life itself and building machines that ultimately turn upon their makers. The story of Pandora as well as Adam and Eve warn us about the dangers of knowledge. And Cassandra's fate serves as a reminder that people don't look kindly upon doomsayers. The Faust myth, now, seems the most relevant. It provides a particularly insightful lens for examining humankind's status, notably our devotion to knowledge and technology, and the possible consequences of that seemingly unquestionable devotion.

Although the Faust myth has been retold throughout the years via a multitude of variants (including accounting for the spectacular success of the American baseball team, the New York Yankees), the basic premise has not changed: a deal struck with the devil — access to forbidden knowledge and the catastrophe that inevitably ensues. The Faust myth also highlights the decisions we (individually and collectively) make as *trade-offs*, in which we gain some things by selecting one path while inevitably foregoing others — the roads not taken.

If Doctor Faustus were alive today, he would probably be a scientist of some sort — a neuroscientist, biologist, nuclear physicist, or, quite possibly a computer specialist. These are the disciplines whose lock-picking of nature's secrets may help unleash the most mischief. But of course it's not merely the scientists who determine the course that their discoveries help make possible or what kinds of knowledge are worth developing or uncovering in the first place.

Knowledge, Particularly its Uses and its Users

The pursuit of knowledge, as the pursuit of the truth, is generally unquestioned and unquestionable. But knowledge — at least to a non-philosopher — is not an abstract Platonic ideal. It assumes material forms and requires energy for its creation, storage, and dissemination. It's basically what's stored in the minds of people or what's inscribed in books, television, YouTube, and the databases in the new virtual "cloud". Practically speaking, knowledge is information that people believe to be true.

Knowledge has changed immeasurably since Doctor Faustus' time. Unlocking nature's secrets these days seems less like an idle dream and more like just another task scheduled for completion. Recent remarkable findings include sequencing the genome of the Neanderthal, developing artificial and synthetic life, studying newly discovered life forms at the bottom of the sea that live in molten metal, new atomic particles with lifespans of one-millionth of a second, stars and new galaxies, cloning animals, and intercepting and interpreting the "movies" that travel from the eyes to the brain via the optic nerve. New drone airplanes on search and destroy missions, "smart bombs", and ubiquitous surveillance systems are all part of a technological explosion. And while driving a car via brain waves or having a video game create an artificial "immersive environment" by communicating directly to your brain (Halpern, 2011), are remarkable to current observers, they are conceivably just small steps on a long road that quite possibly will lead to some truly diabolical destinations.

Knowledge Home Truths

Knowledge is not merely decorative like a painting on the wall. Knowledge is what defines us as a species; it's what makes us cultured and productive. It's also what makes us dangerous and unpredictable. In short, the possession and use of knowledge explains more than anything else why humankind represents a force to be reckoned with. Below we consider several observations or "home truths" on the state of knowledge today. They are merely sketches and although they're discussed in individual sections, they are strongly interrelated to each other.

Knowledge Has Consequences

This meditation focuses on *useful* knowledge. By this we mean knowledge that enables people to think or otherwise engage in an activity that they couldn't have done (or done in a particular way) without the knowledge. Doctor Faustus himself was not interested in knowledge because of deep curiosity about how things actually worked. Knowledge that is *used* has consequences that could be large or small, negative or positive. It is only through *use* that knowledge can be said to have *power* and some people have more opportunity and capability to use knowledge than others.

Knowledge is Distributed

While the knowledge of the 21st century is not distributed evenly among the world's inhabitants, it doesn't reside solely in the minds of a few lone knowledge seekers, nor solely in isolated academic libraries. One of the central truisms of knowledge is that nobody knows it all. The scope of knowledge is vast and presumably uncatalogable in its entirety. It's stored, employed, and disseminated in, from, and to innumerable locations. On the other hand, some knowledge is scarcer than others.

Why is the distribution of knowledge relevant to our Faustian inquiry? For one thing, it takes a team to develop a new nuclear weapon or cruise missile (or smart phone or virtually any complex artifact). For another, we couldn't have arms

paces without competing (and distributed) systems of knowledge. The distribution of knowledge also makes certain behaviors such as the development of bacteriological weapons harder to control. It also means that any viable alternatives to the dominant systems of development and use of dangerous knowledge would have to be distributed, in addition to being well-organized and well-resourced.

Knowledge is Used Asymmetrically

Everybody has knowledge that they can use in addition to knowledge that they can't really use, or use effectively. If we acknowledge that knowledge is often used to some end, is unequally distributed, and requires resources to identify, develop, use, store, and distribute, then we are not surprised to learn that some groups use knowledge to their own advantage, and sometimes at the expense of others. Additionally, knowledge, like other resources can be hoarded or denied to others (although knowledge, once public can rarely be made private). Media systems are important to mention here because the vast differential between access to production and access to consumption that they engender makes them asymmetry multipliers. Certainly they can play major roles in constructing how people are viewed by others — and to some extent by themselves. To a large degree mass media systems determine *what* people are thinking about, how news stories *ought* to be interpreted, and what opinions are seen as legitimate.

Dangerous Knowledge

Although we know that water can kill — drowning in water is certainly possible — gasoline is generally considered to be more dangerous. After all, its main selling point is its explosive combustibility. Although being dangerous doesn't mean that something is not useful, we must acknowledge that some knowledge can be more dangerous than others, particularly that which can be used to kill or oppress people or to degrade the environment in profound ways. This of course should not be construed as a green light for banning (or attempting to ban) "dangerous knowledge" or its pursuit — since we know that this can also have catastrophic repercussions. The Roman Catholic church apparently believed that the idea that the earth revolved around the sun was dangerous and fundamentalist protestant churches in the United States who are fighting evolution must have come to similar conclusions. Some business groups also have found scientific data about, for example, tobacco or climate change, "dangerous" to their bottom line and have spent millions to keep the public as ignorant as possible.

Now scientific knowledge has reached the point where matter can be converted to energy instantly in the form of deadly atomic weapons. Moreover this capability now exists in several countries and is not far out of reach of terrorist groups or even professional criminal organizations. Knowledge likewise about our genetic makeup opens up many possibilities, many quite grotesque. Also as scientists learn more about how our brains work, new opportunities for good — as well as mischief — will become more plentiful. And dangerous knowledge isn't only produced by scientists who have learned how to implant new memories in people, "read" minds (and *dreams*), or turn atoms into atomic weapons. The creation of derivatives and hedge funds are interesting cases where knowledge was used as a wealth multiplier for the rich, while nearly destroying the world's economy in the process. The ways that people use knowledge for power are diverse, widespread, and potentially dangerous. Pollsters work long and hard to identify which slogans elicit the most dutiful and fervent support, and unfortunately this often involves determining which group of people can best serve as a lightning rod for anger, frustration, and fear that can be exploited for political ambitions.

Finally, the idea of "dangerous knowledge" is in itself *dangerous*. Acknowledging its existence is like an alcoholic acknowledging that he or she is an alcoholic; the confessor is thereby expected to head down a certain hard road, usually one that can't be tempered with drink. But denying its existence is likewise dangerous as it condemns us, ironically, to a sort of ignorance and it tacitly claims that we are unable to think about it in advance and, so, must forever be forced to deal with consequences that may have been avoided. On the other hand, while it does seem prudent to consider what type of caution might be appropriate for developing and otherwise "handling" dangerous knowledge, any suggestion that there are "easy answers" waiting to be found that would address the situation *tout court* should be regarded with skepticism.

Knowledge Complexity and Social Complexity

It is said that the last person who knew all the mathematics that was known at the time was Gauss, the German mathematician who died in 1855. The world has changed considerably since that time. While the population of the world has grown exponentially, the amount of information in the world far outstrips that. We know that one person cannot know it all — not even a particular subset of knowledge — and paradoxically the situation has grown worse. A recent physics paper, for example, listed 3,062 authors!

Society in the 21st Century has become more complex since the days of Doctor Faustus. Joseph Tainter, an archeologist who specializes in the *collapse* of societies, examined a large number of civilizations that have collapsed and found that social complexity was the important indicator in each of these cases. Tainter reported that "Hunter-gatherer societies (by way of illustrating one contrast in complexity) contain no more than a few dozen distinct social personalities, while modern European censuses recognize 10,000 to 20,000 unique occupational roles." More distinct job categories translates

into more distinct bodies of knowledge (and thus diminished ability to communicate across job categories) and more complex social networks of relationships (with more potential points of failure). While modern complex societies were created to manage and employ information effectively they also create more information which often leads to more complexity.

The warning against too much knowledge (and of the wrong kind) in the original Faustus myth was in keeping with the theology of the era: too much knowledge equated to too little faith. Moreover, there were good reasons that nature's secrets were secret, generally they were God's property and not of mortal concern. To my mind, there is little reason to invoke God in this meditation, although probing nature's heretofore secret mechanisms with the intent of exploiting them for personal profit regardless of the consequences may still be a concern whether God exists or what His inscrutable intentions might be.

Knowledge Isn't *Really* Contained in Boxes

Compartmentalization (and abstraction) is fundamental to how we think and act. Our brains are apparently built this way. This is actually a very reasonable approach since the world simply offers too much data for individuals to process. For that reason we can only attend to infinitesimal snippets of it at any given time. In many ways humankind has also consciously applied this approach. We have divided knowledge into boxes for our own convenience generally so individuals could concentrate on the little pieces of the whole. This has allowed us to develop sophisticated artifacts such as jet airplanes, vast administrative complexes, and universities with a bewildering assortment of intellectual perspectives. This "divide and conquer" approach has been very productive in scientific inquiry, for example, but with the accompanying loss of holism — the ability to see the whole, the proverbial forest in addition to the trees. Unfortunately, this compartmentalization of knowledge has negative consequences in the academic world, the institution that is charged with the task of creating the knowledge we need. A computer scientist, for example, may fail to get her ideas into a political science journal because the jargon isn't right, while a philosopher may be denied entrance to a biology journal due, at least ostensibly to some missing citations. Thus the important bridges across the knowledge gaps (that are only artifacts of our conceptualizations) are not readily identified and explored. Fundamental mistakes result from the belief, conscious or subconscious, that the world is truly compartmentalized, that our world view accurately depicts the world. It may lead us to believe that we truly know everything in our compartment or that our actions only can have consequences within the context of that compartment. That fallacy can be used to convince us that we need to be only concerned with our own little sphere of knowledge and responsibility.

Ignorance is Power Too

With all the focus on knowledge, it's easy to overlook *ignorance*, the opposite and inseparable companion to knowledge. It's clear that ignorance — as well as knowledge — has an enormous, yet largely unexamined, influence on power. Ignorance is inevitable and it's not always malign — although it certainly can be. Ignorance provides the motivation for learning when people yearn to fill a void. At the same time, ignorance provides a motivation for not learning, when the void is not acknowledged, or when the message (or the messenger) is deemed unsatisfactory.

But practically speaking, what benefits could we gain by vigorously exploring our ignorance: Isn't it true that what we don't know can't hurt us? Like many of our concepts and words, the single word *ignorance* covers a great many connotations, many of which are relevant here. Knowledge — and the pursuit of knowledge — are selective and limited. Knowledge is an island in a *mare incognitum* of ignorance. The pursuit of knowledge is like using a flashlight to explore an enormous cave. The question is where to aim the flashlight.

We don't explore our ignorance in order to *embrace* it. We explore our ignorance with an eye towards developing a more enlightened — and useful — world-view. Acknowledging ignorance, suggests the value of looking where other people aren't looking. Moreover, it helps us put the knowledge we do have (or think we have) in perspective. Inevitably an appreciation of what we don't know — which is *part* of our ignorance — would result in more caution — perhaps even too much. Finally, focusing explicitly on ignorance makes us consider the (conscious and subconscious) processes that perpetuate ignorance as well as those that produce knowledge. Ignorance — particularly its role in what is open to public inquiry and *how* we face it — is strongly related to the maintenance and exercise of power.

Ignorance is maintained in individuals in two ways: (1) focusing one's attention on irrelevant and unimportant issues (or on nothing at all); and (2) believing and taking in information (including meta-information) that fosters ignorance. Ignorance, as with knowledge, is propagated from person to person, basically by encouraging either or both of the approaches above. Public ignorance comes in two forms: amateur and professional. The amateur variety is basically due to individuals who by habit or conscious choice are unable or unwilling to countenance new information or put their own knowledge to any sort of interrogation. Although there is no lack of amateur or homespun ignorance cultivation, there are also many examples of high-quality, professional ignorance cultivation. Here we mean premeditated, well-planned, amply-resourced, long-term, and, often, secret campaigns to explicitly cultivate ignorance in society. The decades long

campaign by the tobacco industry to mislead the public about the dangers of smoking is an excellent example. The current campaign, waged primarily in the U.S. but now being exported to other countries, to create doubt about the realities of climate change is an example in which collective ignorance may lead to collective suicide. Interestingly, meta-information plays a critical role in the propagation of ignorance. If people can be convinced, for example, that all knowledge springs from a single source or that certain people or types of people are never to be believed than the job of ignorance maintenance can become more of a private affair and less of a professional obligation. And we should assume that ignorance has no "natural" maximum: it may not be such a large step from denying climate change today to denying all science tomorrow.

The Updated Faustian Bargain

Humankind's current situation scarcely resembles the situation of the original Faust. The core metaphor, however, remains intact: securing short-term personal gain while causing great pain to others. When we use the Faust myth as a way to explore our current situation we compare and contrast the elements of the original to the updated version. We must inquire into the identity of Doctor Faustus of the 21st Century and, in the more material and secular world of today, determine the nature of the *soul* that is being lost in the bargain. *What* unlimited powers would the modern Doctor Faust be striving for? Finally, since people don't always live up to the terms of agreements they make, we can also ask what, if anything, could — or should — Faustus do to squirm out of the bargain, to avoid the loss of his all-important soul. Or is he doomed? And are the rest of us required to endure for eternity the consequences of his unhampered and immature exploits?

Who is Dr Faustus?

Knowledge, as we have pointed out, is distributed. We also know that some knowledge — especially that which sets into motion the major unsettling forces that we'd expect from a 21st Century Doctor Faustus — can only be effectively employed by groups. It's clear, therefore, that Faustus in the 21st Century cannot be a single person. Faustus is now a collective, a shape-shifting collection of people and organizations. And although financial experts, pollsters, policy-makers, managers, scientists, developers, etc. etc. are often primary instigators, the crude division of people into "us" and "them" can at least partially mischaracterize the conspiracy that is everywhere.

And Who is the Devil?

The myth makes a sharp distinction between Faust, a mortal, and the devil, a supernatural force of unspeakable intentions. If Faust were an individual being led astray his sin would be his desire to seek the diabolical and/or his inability to question the motives and intents of the group he's signing on with and ultimate effects of their — and his — actions. The devil then would be the allure of the myriad opportunities for power, fame, and money (and access to social status, golf courses, fine wine, and art collections). Secularized and stripped of narrative, the "devil" in our current exploration can be more accurately described by social forces, institutions, and the incentives, both positive and negative, that induce people to abide by the existing social forces. It would be easy to say here that the "devil" here is the corporations, government officials, armies, professional criminals, etc. etc. who define, create, market, and police these opportunities, but — as we know — these associations are composed of people as well. The devil is not *out there*, distinct from us living in another part of town, a separate hell, but, like Faustus is actually *us*. The dividing line between Faust and the Devil, therefore is not clear at all. We turn out to be both the mortal and the devil in the updated, secularized version.

The New Faustian Bargain

The new Faustian bargain (2.0?) seems then to be in full swing. Many of nature's secrets are now being tortured out of the earth and its denizens, the universe, and even our brains and minds. In many cases the newly learned secrets will be employed to further the exploitation of others, some however indirectly and not necessarily with that explicit aim. Furthermore, the knowledge that is now being revealed and leveraged into power and money is likely to be increasingly more dangerous than ever before. When does the equivalent of Faustus' 24 year omnipotent reign end and when do the tragic consequences begin?

The "lesson" of the original Faust story was *not* to make a pact with the devil in the first place —or at least to renounce your sins before it's too late. Unfortunately this doesn't seem to be an option for us: *the pact has already been made*. The reign is not coming to an end and the tragic consequences are taking place at the same time. In this non-fictional version in which most of us are bit players, the consequences are not as well-specified as they were in the original version. We don't know how the story will end. Also, in the original tale, the biggest loser was Faust himself; presumably he's *still* roasting in hell. While the mischief he caused was severe, it was limited, and ultimately caused barely a ripple in the lake of human history. But the nature of knowledge, as we have seen, has changed considerably since his exploits and the way it is wielded could end in tragedy for untold millions of the earth's inhabitants, humans and otherwise.

Thus a good first-cut re-mapping can be made: *we* — collectively — *are Faust*; the powers are those that technology, social standing, and ideology grants us; and the soul, stripped of mysticism, could be seen as the essence of what's good in

people, the desire to do the right thing even if the personal rewards are diminished or changed into punishment. This, although not featured in this meditation, is also an inalienable trait of humans. While often ineffective against coercion, not as celebrated as strength and violence, and often disparaged, this trait will never be completely erased.

Danger Signs

The nature of knowledge in the 21st Century and the ways we employ it constitutes a fundamentally new Faustian bargain. But why is this new Faustian bargain bad? What would or could backfire if we just continue on, living each day abiding by the general forces that have brought us to this point? Can we really anticipate with any degree of confidence how the tragedy would unfold or even if it will unfold at all?

If the new Faustian bargain results in degraded environmental conditions, such as pollution, lack of biological diversity, or substantial climate change, or degraded social conditions such as famine, disease, poverty, violence and war, exploitation, or ignorance, then we can at least begin to question the nature of the bargain. Although many of these problems "have always been with us", if these negative features are actually increasing faster than we can adapt to them and are no longer limited to specific regions, but are playing out throughout the world, then the bargain should be seriously reconsidered.

When the Faustian note comes due (as many observers believe is already happening), it's most likely to show itself through three related signs or indicators. The first of the three indicators is unsustainable complexity. The second is social and environmental degradation, which to a large degree, is a reflection of the way that knowledge is applied instrumentally and for personal gain. The third, due in part to the severe challenges of the first two indicators, as well as the entrenched social inertia (sustained by abiding rhetoric), encourages a degraded intellectual appreciation of the situation society-wide and the general ability of society to address challenges equitably and effectively at the time when it is most needed.

Unsustainable Complexity

The complexity of the modern world is certainly increasing. While this is seen as a strong causal factor in societal collapse by some authors (notably Tainter, 1988), it is also linked to social inequality since the social roles which multiply in complex societies are likely to reflect and maintain social hierarchy. Also as society becomes more complex, it becomes more and more difficult to understand how it all "works." When unexpected disruptions such as natural disasters, food shortages, rising costs, or economic meltdowns, occur, the consequences are hard to anticipate or sufficiently address when they do occur. Complexity, therefore, to some degree reflects vulnerability. While Tainter believes that films and novels depicting societal collapses in which "there is fighting for food and fuel" and "bands of pitiful, maimed survivors scavenge among the ruins of grandeur" are overdramatized, he does allow that the scenarios do "contain many elements that are verifiable in past collapses" (Tainter, 1988). In the archetypical "collapse" legitimate authority and the existing social order completely break down.

Social and Environmental Degradation

Social and environmental degradation are products of misdirected knowledge and technology and both are impediments to progress, signal crisis situations, and lead to additional problems at a time when we are seemingly incapable of dealing with the ones we already have. Unequal societies tend to institutionalize their inequality. Thus many asymmetric approaches such as surveillance, imprisonment, exploitation (economic and otherwise), and the threat of war — all aided by knowledge and technology — are developed as part of this project. Increasingly, environmental degradation (including scarcity of natural resources) is an important factor leading to war. And, conversely, war is a social enterprise that squanders critical resources and causes severe environmental degradation unintentionally and intentionally.

Degraded Civic Intelligence

Our problems are complex and growing more complex (due to the density of global interrelationships, and the speed, magnitude, and unpredictability of change) and often defy conventional "solutions." The consequences of these problems are likewise complex and difficult to anticipate in meaningful ways. As the problems become more vexing, the ability of people to adequately understand the problems and develop and implement effective and equitable responses (what we call civic intelligence) becomes more and more important. To do so, the public must have an appropriate amount of actionable knowledge to be able to participate effectively. In other words they should actually be able to use that knowledge in the public arena in addition to *having* the knowledge. Unfortunately there is ample evidence that as the need for this grows, this capability may be declining.

Unequal power generally promotes civic ignorance. Under conditions of unequal power more powerful groups dictate what less powerful groups can do (what jobs, for example, if any, they can perform and under what conditions), and to a large degree what information the less powerful groups receive (particularly through the media). Additionally, the knowledge, worldview, and reasoning ability (due to substandard education) of less-powerful groups impede their ability

to compete in the public sphere of ideas. Having less power also generally means being economically disadvantaged and, consequently means being saddled with all of the disadvantages that often result from that — worse health, shorter lifespans, polluted environment, less access to fresh food, poor access to information and communication, diminished self-respect and sense of opportunity, and lack of hope for the future. Also, for the most part, the rhetoric, myths, assertions, and beliefs of the era are more actively constructed by the powerful (but also indirectly through the material conditions which are also substantially constructed and controlled by the powerful). Unfortunately although people are denied knowledge, it's fair to say that in many cases that they don't want it! Of course, who could really blame them: the problems are truly difficult and who needs the responsibility anyway? People don't think working in public affairs is fun, useful, socially acceptable or cool, nor are they motivated to initiate projects that are not likely to bear tangible fruit. Moreover, many people are plagued with self images of powerlessness.

The three danger signs described above are broad and difficult to measure. One assertion of this meditation is that any one of the three danger signs generally acts to exacerbate the other two. One possible glimmer of hope exists however. Although there are historical precedents this glimmer is also difficult to predict or measure: It's the tendency for societies to create new, or transform old, paradigms, institutions, and norms when confronted with seemingly intractable problems. Societies have been known to improve their civic intelligence when it is needed. While this may be a long shot it's one of our most critical considerations.

Defaulting on the Faustian Bargain

Clayton: *We have to turn around. We're going the wrong way!*

Donna: *But we're making such good time!*

Although the speakers above were my parents navigating in unfamiliar territory by car fifty years ago, their conversation may aptly describe the current situation. We as a worldwide society *are* making great time! We may even arrive soon at the destinations to which we're heading. Too bad we may be heading in the wrong direction...

The consequences of ignoring the Faustian bargain that now directs our future could be grave indeed. The plan for our final chapter may already be unfolding. The technology that ultimately does us in can be large, as is the case with nuclear weapons, or it can be microscopic, as in the case of designer viruses; it can be slow acting or nearly instantaneous as, say with a nuclear holocaust. The end will likely come through the cascading failure of a million loosely connected systems of economic, political, and cultural order. And it may be preceded by a wholesale rejection of the precarious nature of the status quo's legitimacy.

But, unlike the original Doctor Faustus, our pact with the devil is not ironclad or legally binding: We didn't sign anything and many of us are already not abiding by some of the terms of the pact either by conscious choice or simply by being who we are. The Faustian trend that may ultimately (if not sooner) thrust us into the abyss, is vast, and although it is vast, is somewhat invisible — like water to a fish — perhaps due to its utter ubiquity. And, obviously, in our retelling, the power that is held by the millions of people who are currently leveraging the bargain won't be withdrawn all in one go as happened to Faustus. Power will continue to morph and shift shape perceptibly and imperceptibly. And power often reneges on the promises that it made, the glittering futures it portended, and the distorting worldviews it cultivated, while denying or discounting the negative and unequally distributed effects that are left in its wake.

People hoping for magic incantations that will solve our collective dilemmas will be disappointed. Nor can we expect a ruler to emerge who has all the answers we need. (There is no doubt that we will continue to have a plethora of politicians and other pundits proffering a variety of "easy" solutions whose adoption are almost guaranteed to make things worse: being *strong*, shrinking government as an end in itself, breaking up the unions, sticking to "basics" in education, invading other countries, adopting fundamentalist religious doctrine, returning to the "good old days," building more prisons, or demonizing immigrants or other marginalized groups.)

The end may not come about in any of the ways we discussed here — the particularities that the future brings can not be foreseen with perfect acuity. But is there any way that more attention to social and environmental amelioration could be bad?

Towards Civic Intelligence

One of the implications of the original myth was that ignorance is actually preferable to knowledge — at least the kind that Doctor Faustus craved. But popular, public ignorance of this type of knowledge — including its origins, possible uses, and implications — is, ironically, key to the perpetuation of the Faustian bargain. Our argument is that a more thorough public understanding of knowledge including its limitations, and the real-world forces and social institutions that

surround its life-cycle — from conception to use and beyond — is essential, even if this approach is discouraged within today's realities. While it is not possible to precisely anticipate the consequences of any line of knowledge development or use, we know that some approaches have greater potential for misuse or for encouraging activities that will likely result in environmental or social degradation. The idea of "banning" knowledge via, for example, some undefined "knowledge police" is definitely not being advocated here. (Although opponents of the civic intelligence perspective advocated here tend to invoke this bogeyman at every opportunity.)

We argue that the present system could and should be tempered by more democratic processes that more actively encourage broader, more inclusive, and more environmentally responsible outcomes. If we simply trudge along, thinking according to the dictates of the era, hoping for the best (or not hoping at all) we are relying on inertia, technological solutions, the market, or, perhaps luck, to address our problems. This inertia helps prevent the development of alternative approaches, thus promoting the powerful / powerless divide even more. But how much change is actually possible? Can we envision shifts in our trajectory without relying on absolute and abrupt reversals of perspectives, the character of people, our institutions, or the dogma we count on to orient our lives? Answering these questions won't be easy but we won't know if we don't try. We do know, moreover, that norms and beliefs as well as material conditions change and evolve. In other words, although social inertia represents an enormous force in its own right — and a force that is continually being maintained and reinforced by virtually all actors in society, through action and inaction alike — we believe that it can be diverted, transcended, transgressed, breached, and detoured around, although not always (of course) in the direction we prefer. In other words, we don't have to wait for collapse before altering our norms and beliefs and, consequently, our actions.

We define civic intelligence as collective intelligence applied towards the collective good, *civic means applied to civic ends*. One of its hallmarks is the fact that civic intelligence will take different forms in different times and places, just as coast dwellers will have different needs for intelligence than people who live in the mountains; an urban dweller in China, a native American on a reservation in the United States, a worker in Mozambique, and an unemployed person in Manchester may all have concerns about taking care of their family while their material and cultural situations vary greatly. Yet at the same time, there are some universals: social learning and the monitoring and management of power, for example, are both required in the civic intelligence of any society.

The Faustus story can still serve as a warning but we also need myths that will orient us positively. After all, the point of a myth is not whether it's untrue or true, but what it tells us, how much it resonates, and what actions does it encourage us to take. We also need counter-myths to suggestions that we should just plunge ahead without reflection — cliffs, rapids, etc. notwithstanding — or that our enemies must be smote (the trouble of course is that everybody is somebody's enemy according to somebody else). Civic intelligence doesn't require machismo or violence, but it does require *everyday heroism* (Schuler, 2008). A theory of civic intelligence, especially one based on broad distribution and incremental progress, demands millions and millions of steps forward, small steps that are unlikely to be dictated from above.

Civic intelligence builds from our most *humane* characteristics — not from our most "human." What aspects of "being human" do we actually want to encourage? Killing people, for example, is in many ways "natural" to our species — after all we've been doing it for hundreds of thousands of years. At the same time, it's part of our nature that we generally prefer to keep in check. Moreover, from an early age, in probably every society, children are prevented from performing certain activities. And even for grown-ups, there are limits on behavior (there is only so much caviar that one person can eat at a sitting, for example). Yet many people believe that there should be no constraints on their activities, that their "natural state" is absolute freedom. For that reason, capitalists may eschew the idea of taxation, regulations, or any scrutiny of their financial records, scientists may feel that non-scientists have no right to weigh in on what experiments they should or shouldn't conduct, and developers or land-owners may believe that they and they alone should decide what to do with the land to which they hold title. The assertion that no limits is both possible and worth earnestly pursuing helps perpetuate the Faustian bargain.

If we can shift the balance from sleep walking and instinctive, primordial, and non-reflective reactions towards preservation — of ourselves, non-human life, and the environment — and once there is a certain magnitude of force, the forces of ignorance may be outflanked. These forces won't go away overnight, if ever, but these are what civic intelligence must confront, even though this is not generally where we place our hopes. Ignorance, in many ways is the enemy. Yet ignorance remains inevitable and inalienable. The question is how to proceed boldly but with proper respect for our ignorance and other limitations. One crucial step would be to stop pretending that ignorance, including civic ignorance, doesn't exist.

A stronger focus on civic intelligence would require some reorganization of research priorities — as well as how research was conducted. It would take it for granted that "ordinary" people were essential to the entire process, both as consumers *and* as producers of research. In our search for civic intelligence looking at successful campaigns for addressing social or

environmental crises in which citizens played strong roles would command more attention than it had before. Particular attention would be paid to campaigns that brought together a wide diversity of people, addressed many problems simultaneously, and resulted in new (or transformed) paradigms or frames that encouraged ongoing, distributed, and improved civic intelligence. Looking at these cases with an eye towards uncovering answers to questions such as what issues or conditions helped initiate the campaign, how did the people organize themselves and share ideas with others, what roles did other powerful institutions, such as the mass media, lobbyists, and public relations professionals overtly or covertly play? Looking at these cases — and ones that failed — should also help us as we attempt to transform our institutions — and develop counter institutions while increasing — and building on — our collective awareness of social issues, interdisciplinary teams, and new partnerships.

Research into the nature of the problems we face is also important. Looking into the causes of any problem opens up a potentially unbounded ecosystem of hypotheses. Thus sickness in an individual might be caused by eating fish from a polluted river. The pollution could then be traced to one or more polluters which could be traced to a variety of motivations, accidents, economic considerations, laws, or, even, background myths, slogans, or other frames that help orient individual behavior on a subconscious level. We also need to be aware that in trying to "solve" our current problems we may introduce new ones or exacerbate old ones. While the perils of non-action might be great, certain types of actions may also result in catastrophe. A rush to "solve" the climate change challenge could result in ill-starred operations like geo-engineering on a large scale. These approaches, if history is any guide, don't always go according to plans, and could, in fact, help unleash catastrophic environmental — as well as social — consequences. We believe that these undesirable outcomes can generally be linked to civic ignorance. It must also be pointed out that any findings related to successful civic intelligence mobilization can also be useful to people whose aim is to prevent or disrupt future attempts. These efforts, in turn, can presumably only be countered by awareness of the ways in which civic ignorance is propagated and by the quality — and *quantity* — of the civic intelligence campaign participants.

Humankind's Hellish Fall?

While the importance of the devil has diminished considerably since the days of Doctor Faustus, the "diabolical" impulse to exploit knowledge for personal profit at the expense of others (and the public at large) is as strong as ever. The nature of the threat however has been modernized — bureaucratized, distributed, professionalized, justified, infused with resources, lionized — and at the same time been rendered largely invisible. Understanding its nature is crucial to creating a counterforce. Then the challenge becomes developing an effective *counter* force that isn't solely defined by what it's *countering*.

Steadily, and mostly without reflection, humankind, has been working for millennia to construct the world we now inhabit. Clearly some choices must be made soon. Unfortunately they should be made collaboratively and this is not easy to do. Ultimately this meditation is an argument against predestination; it is opposed to the idea that the Faustian bargain in the 21st Century is a "done deal." In Marlowe's play the chorus has the last word:

*Faustus is gone: regard his hellish fall,
Whose fiendful fortune may exhort the wise,
Only to wonder at unlawful things,
Whose deepness doth entice such forward wits
To practice more than heavenly power permits.*

But Doctor Faustus in the 21st Century cannot be summed up as readily as his 17th century prototype. The "hellish fall" may yet in part be avoided. In order to do so, our civic intelligence would have to improve quickly and profoundly. And as the most vexing problems we now face have earthly origins, the "heavenly power" we need today must come from a distinctly earthly source: ourselves.

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