Creating Social Systems

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Abstract

Humans have been purposefully creating objects for millennia. Increasingly, the concept of design is being applied more broadly to organizations, cities, and social systems of many kinds. There is still no clear foundation, however, on which such designs would be based. This chapter explores current global dilemmas for which design approaches could be appropriate, and describes possible *first principles* on which human social systems might build.

Keywords: social systems, design, governance, nation-building, Plato

Introduction

Can we consciously create the kind of world in which we want to live? On one hand, it appears to be a simple question. We have been *taming* the world for millennia; shaping it to better meet our human needs. If our knowledge of history is correct, we went from living as other primates to becoming the dominant species on the planet. We moved from learning to plant and irrigate crops to genetically engineering plants and animals. We moved out of caves and built magnificent cities. We harnessed the power of animals and of fire, then of fossil fuels and atoms. We created tools and built machines, from oxcarts and chariots to space ships and the Internet. We learned to speak and to write, then to store data and communicate around the globe via satellites circling in space.

Our use of tools and development of technologies has been remarkable. Our senses of purpose and meaning have not always kept up. There are increasing

numbers of things that we can do - potentially. Another question is whether we should do them – and how we decide that answer. A third question, though, is how we actually bring into reality the result that we want.

We often speak about the world getting smaller. Physically, of course, it is not. The connections between people and locations, though, have gotten both closer and more distant than even our recent ancestors might ever have guessed. We can talk with people literally on the other side of the world, in real time, but we may barely know the people who live down the street. We can travel to the other side of the world in less than a day while it may take hours to get a few miles across a city in the gridlock of traffic.

We have managed to organize ourselves well enough to have accomplished countless tasks. We still operate socially, though, through patterns which look much like our primate cousins. We need each other, and we live with greed, jealousy, and rage. We form attachments and alliances, and play games of sexual politics. We have literally changed the face of the Earth, but we have never left behind our ancient roots.

If we were to create a new and better world, what would that mean, and how would we go about it?

It is an old question. Nearly 2400 years ago, Plato proposed the necessary characteristics for rulers of a state in "The Republic." Sir Thomas More penned his concept of utopia in the early 1500s. Karl Marx gave us his view of society, as did the framers of the US Constitution. All of those visions have influenced our world in different ways, but none of them are the specific realities with which we live today.

Some of our world has been planned, but much of it has simply evolved over time. We have endless questions about our origins and our futures. Authors Carl Sagan and Ann Druyan (1992), in their book "Shadows of Forgotten Ancestors," summarized many of the key questions facing us in this way:

> Who are we? Where do we come from? Why are we this way and not some other? What does it mean to be human? Are we capable, if need be, of fundamental change, or do the dead hands of forgotten ancestors impel us in some direction, indiscriminately for good or ill, and beyond our control? Can we alter our character? Can we improve our societies? Can we leave our children a world better than the one that was left to us? Can we free them from the demons that torment us and haunt our civilization? In the long run, are we wise enough to know what changes to make? Can we be trusted with our own future? (p. 4).

One of the differences now, from the past, is the magnitude our ability to affect the planet, both through our technical abilities and due to our population size. As with most things, there are both challenges and opportunities. In spite of all of our achievements, we seem to continue on trajectories which take us to results with which we are not satisfied. Serwer (2009) labeled the first ten years of the new millennium (that is, 2000-2009) as the "decade from hell." In the US, it began with a controversial presidential election, which was ended by a legal decision rather than a clear majority of votes. That was followed by the terrorist attacks of

September 11, 2001, and the subsequent invasions of Afghanistan and Iraq. A tsunami in the Indian Ocean killed an estimated 200,000 people, and then Hurricane Katrina devastated New Orleans. By the end of the decade, we faced the potential collapse of the largest financial systems in the world, along with some of the largest corporations.

In the following years, questions about mounting debt threatened economic stability in Europe, and the existence of the euro as a currency. Another tsunami caused the tidal wave which washed over the Fukushima power plant in Japan, triggering the meltdown of its nuclear reactor. Major earthquakes caused disasters in Haiti, China, and other countries. Political unrest spread through countries in the Middle East, in what became known as the Arab Spring, toppling governments and sparking violence and battles for power. Terrorist attacks by radical groups continued. A major hurricane hit the New Jersey coast in the US, while record heat, wildfires, and flooding plagued Australia.

Humans seem always to have faced adversity, relative to what we wanted or believed might be. Some of that has come from natural events such as weather (droughts, floods, hurricanes, tornadoes, etc.), or earthquakes and volcanoes. Some of that has come from our relationships to other organisms (e.g., pests, parasites, viruses, or predators). Often it has come from competition or differences with other humans.

Wars have caused millions, and even tens of millions of casualties at different points in history. Famines and plagues have created similar tragedies. Money is so closely tied to our access for basic needs now that financial collapses can create similar disasters. It is possible that what we see as catastrophes are just parts of natural cycles, but they are not results to which most humans aspire. Are these problems inevitable, or can we choose to create something different?

Shaping the landscape

For most of human history we lived as a part of nature. We were primates, evolving through many biological relatives. Depending on the viewpoint that you take, we were either animals trying to survive the whims of nature or we were one of many species living in harmony with our environment. In either role, we would not expect our ancestors to have done much contemplation of design.

As we evolved through the millennia, though, humans learned to design, plan, and bring to reality all manner of innovations. Some 2.5 million years ago, our ancestors discovered how to use tools. Harnessing the use of fire, possibly 800,000 years ago, for heating, light, and cooking extended our capabilities. We learned to hunt cooperatively. Those skills allowed us to move from one ecological niche to another; from being mostly prey for larger carnivores to becoming effective predators. Wearing the skins and fur of other animals let us explore and

live in climates to which we would not otherwise have been suited. At some point, we developed the capacity for language.

We planted and irrigated farms to better control the availability of food. We built stronger structures in which to live, and developed progressively better tools for construction. We learned to use the power of animals, of wind, and of water. Eventually, we learned to harness the power of ideas, and to record them.

Our earliest social structures may have looked much like our primate relatives, a combination of competition for dominance and cooperation, built around small family groups. Larger collectives became tribes, and more settled groups created villages. Judging from what we know of indigenous peoples, there were probably various arrangements of leadership and cooperative decision-making.

Larger groups seemed to create greater hierarchy and division of labor. Eventually, kings and queens ruled nation-states, consolidating massive wealth and power into the hands of ruling families. Their judgments were the decisions by which others lived. They enforced their rule through command of armed guards and military units. Most of our recorded history is dominated by legends of men and women ruling through the exercise of various forms of power.

Today, we think in terms of urban planning and economic development. Most of our efforts and resources, though, continue to be focused on structure and infrastructure. Only at various tipping points have we consciously considered the governance of our social systems; how we live together in those places that we build.

A U.S. view of progress has the world moving towards systems of democracy and free-market capitalism (as understood by Americans.) Not everyone in the world agrees. In general, though, progress seems to include better jobs, access to education and to health care, more comfortable living conditions, and so on. The exact forms those take varies.

Both biologically and socially, we live with the vestiges of our history. We remain a species on the planet Earth, intimately tied to resources in a thin layer of atmosphere. We also share, and differ about, the ideologies by which we make sense of our existence, and we are willing to fight to the death about both resources and beliefs.

Where, then, do we begin our quest for creating a better world?

Thinking in terms of design

Systems scientists including Russell Ackoff, Bela H. Banathy, Aleco Christakis and John Warfield, began talking decades ago about the purposeful design of human social systems. Cross (2011), in his study of design processes, arrived at three key characteristics that he found in common: "(1) taking a broad 'systems approach' to the problem, rather than accepting narrow problem criteria; (2) 'framing' the problem in a distinctive and sometimes rather personal way; and (3) designing from 'first principles'" (p. 75).

Beginning with the last point first, agreeing on the first principles of human social systems is not simple. Materials have various properties, all of which may make a difference if you are designing a physical object. How would that relate, though, to the design of human social systems?

For design related to human biology, topics such as biomedical engineering, or genetic engineering, come to mind. First principles in those areas are based largely on the properties of human cells and organs. What, then, might be the first properties of human social systems, understanding that they are not just aggregates of biological functioning?

We base many of our beliefs about societies and human nature on our assumptions about history. What we know of history, though, has to be understood as a matter of interpretation. As Eisler (1987) notes:

> Archaeology as a science dates back only to the late 1800s. Even then, the earliest archaeological excavations, though also motivated by intellectual curiosity about our past, primarily served a purpose akin to that of grave-robbing: the acquisition of striking antiquities by museums in England, France, and other colonial nations (p. 9).

Even our assumptions about hierarchies of power in other animal groups need to be calibrated. As explained by explained by Frans De Waal (2009), a primatologist and ethologist:

> Every debate about society and government makes huge assumptions about human nature, which are presented as if they come straight out of biology. But they almost never do… Many animals survive not by eliminating each other or keeping everything for themselves, but by cooperating and sharing (pp. 4-7).

We also have theories, of course, from sociology, anthropology, archaeology, and historians. Most, though, have been forced into the molds of science, attempting to build explanatory models, and assuming that past patterns predict future behavior. Certainly, there are enduring patterns at varying scales of the ecosystem, including for humans. As first principles for the design of social systems, though, they leave us with little from which to work.

Another candidate for first principles, the psychoanalytic work of Sigmund Freud, was as a milestone in explaining the basic principles of human nature and behavior. Freud's concepts of innate drives and of our necessary progression through developmental stages (or the disabilities caused by lack of proper development) revolutionized much of our modern thinking. De Waal (2009) pulls together threads from various areas of study to reflect such influences:

> The sexual connotations of Freud's origin story may serve as a metaphor for all of our political and economic dealings, a connection confirmed by brain research. Wanting to see how humans make financial decisions, economists found that while weighing monetary risks, the same areas in men's brains light up as when they're watching titillating sexual images. In fact, after having seen such images, men throw all caution overboard and gamble more money than they normally would. In the words of one neuroeconomist, "The link between sex and greed goes back hundreds of thousands of years, to men's evolutionary role as provider or resource gatherer to attract women" (pp. 161-162).

As described, though, by the British psychoanalyst John Bowlby, Freud's groundbreaking ideas were theoretical models, again strongly influenced by the prevailing molds of traditional science. As Bowlby (1982) explains:

> For Freud the psychical energy model was an attempt to conceptualise the data of psychology in terms analogous to those of the physics and chemistry at the time he began his work, and thus was thought to have the great virtue of linking psychology to science proper (pp. 19-20).

Bowlby's own work involved replacing the notion of instinctual drives with concepts from what we now know as cybernetics. As Bowlby (1982) states this:

> Models that promise to make great contributions to our understanding of the prototypic structures of instinctive behavior are models developed by control theory… The two features [of control systems] we shall start with concern the age-old problem of purposiveness and the modern concept of feedback (pp. 40-41).

Bowlby's (1982) ideas help to provide an explicit link between what we design and what continues to evolve in our natural ecosystems:

> When the structure of a system is considered, the environment within which it is to operate must be considered simultaneously… It is sometimes useful to refer to the environment of adaptedness of a man-made system as its environment of designed adaptedness and to that of a living organism as its environment of evolutionary adaptedness (p. 50)

With respect to questions of human nature and instinctive behavior, Bowlby (1982) further explains that:

> Instinctive behavior is not inherited; what is inherited is a potential to develop certain sorts of system, termed here behavioral systems, both the nature and the forms of which differ in some measure according to the particular environment in which development takes place (p. 45)

Effectively, a significant part of what we must design (or discover) are the proper conditions – the necessary environment – in which the human social systems that we want will develop and evolve.

While Bowlby's work definitely hints at the systems approach which Cross (2011) noted, it is the theories of yet another psychiatrist which provides a more explicit foundation. Andras Angyal's (1941) work underpinned Socio-Technical Systems, as attributed to Emery and Trist, and their colleagues (see: Trist, 1992), and later, Socio-Ecological Systems (Emery, M., 2012). The philosopher and biologist, Ludwig von Bertalanffy, is more well-known in the US for his connections to systems theories, but it is actually the work of Angyal which brings fundamental systems theories closer to human social systems.

Because of his primary work in psychiatry, Angyal (1941) tends to use the terms organism and environment. The same principles apply, though, when he shifts to using system in place of organism.

It is common for people to hold the idea that systems have to do with collective parts, in some spatial relation to each other. Angyal (1941) makes clear that this is not what he means by systems. There are elements, or members, or constituents

of systems, but their physical relationship to each other in space is irrelevant. It is their collective behavior in relation to each other which matters. As Angyal states:

> It is, in principle, impossible to draw any line of separation between organism and environment because organism and environment are not static structures separable in space, but are opposing directions in the biological total process… We cannot tell whether a structure belongs to the organism or to the environment, but we can determine to what extent a process is respectively organismically or environmentally governed (pp. 92-95).

The distinctions are important because of the change in understanding which Angyal tries to convey. Living systems cannot be understood through the collective properties of elements. They must be studied and understood as dynamic wholes. As Angyal (1941) specifically explained this, "Since the existential form of the organism is a dynamic one, it has to be studied from the dynamic point of view, that is, as a process" (p. 50).

What distinguishes the elements of a system, then, is not the physical or spatial proximity, but the fact that the elements act as a part of the system. Constituents behave in relation to the governing principles of the system. As expressed in Angyal's (1941) words:

> In every whole there is a leading principle according to which it is organized. Thus the necessity arises of defining the leading principle of organization of the biological total process. The problem can be stated as follows: What is the general pattern which the organismic total process follows? (p. 21)

To be a part of a system, then, is to act in relation to its governing principle. But because systems exist in a dynamic universe, there are influences and signals of all kinds occurring at all times. Angyal (1941) explains this dynamic process as the flux between autonomy and heteronomy. Autonomy represents the internal governance patterns of the system itself. Heteronomy represents the external influences from the relevant environment. Every system evolves in a balance between *self-government* and *government from the outside* (p. 39).

Angyal's description would seem to be very similar to that of Maturana and Varela (1992), regarding ontogeny. As they state:

> Ontogeny is the history of structural change in a unity without loss of organization in that unity. This ongoing structural change occurs in the unity from moment to moment, either as a change triggered by interactions coming from the environment in which it exists or as a result of its internal dynamics (p. 74).

Angyal (1941) sees a general trend in the development of systems towards autonomy. In light of his work as psychiatrist, it is easy to see why that might be. As humans mature it assumed that they should become more independent and self-sufficient. The process of autonomy has to do with a system working to act on its environment rather than being controlled by it.

Again, this appears similar to other work in systems, this time from Bertalanffy (1984), in his use of the term progressive mechanization:

> At first, systems – biological, neurological, psychological or social – are governed by dynamic interaction of their components; later on, fixed arrangements and conditions of

> constraints are established which render the system and its parts more efficient, but also gradually diminish and eventually abolish its equipotentiality (p. 44).

The conditions of restraints refer specifically to what Bertalanffy calls secondary regulations, to which he connects processes of feedback as described by Norbert Wiener in cybernetics. The principles are similar to what Maturana and Varela called operational closure, essentially, the system being directed only by internal rules, but responsive to external stimuli as interpreted through those internal principles.

As a foundation for first principles of human social systems, we are still in difficult territory. Bertalanffy, and Maturana and Varela, developed their theories from work in biology. Bowlby and Angyal worked primarily from an individual level in psychiatry, but with obvious implications for functioning in society. Luhmann (1995) applied the work of Maturana and Varela to his theories of social systems, with some degree of acceptance. We have yet to achieve a consensus, though, about the principles of social systems as such.

Trist (1992) challenged Angyal's (1941) work in this regard. As he expressed it:

> The systems with which Angyal is concerned are what would now be referred to as tightly coupled systems. The body is his constant analogue in which the parts have no independent existence of their own, and by extension, he treats the psychological level of the psychobiological individual in the same way. At the social level, however, as Ackoff and Emery (1972) point out, an organization or group is composed of parts (individuals) which are themselves purposeful systems and have their own independence value. Social systems have a higher degree of openness than the psychobiological systems on which Angyal focused (p. 125).

To some degree, Trist is correct in that Angyal's interest is in developing a theory (actually a science) of human personality. Angyal (1941) is clear, though, about some of the connections with the larger environment. As he describes this:

> The integration of the individual into the social group, the assimilation of its culture, of its written and unwritten codes, are just as essential for the personality development and personality organization as any of the physiological functions. Thus it appears that personality is a larger unit than a mere individual organism, because it also includes those factors through which it functions as a participant in the superindividual units of society and culture (p. 170)

So for Angyal (1941), personality is not just an individual trait, but extends to the superindividual parts of society. While difficult conceptually, it would seem to stay consistent with his thought that systems (organisms) do not exist without environments. It is also critical for the development a third key concept which he terms homonomy. As he explains and defines this:

While the trend toward increased autonomy aims at the domination of the surroundings, the characteristic attitude toward superindividual wholes is rather a kind of submerging or subordination of one's individuality in the service of superindividual goals… For this principle we propose the term "trend toward homonomy," that is, a trend to be in harmony with superindividual units, the so-

cial group, nature, God, ethical world order, or whatever the person's formulation of it may be (pp. 171-172)

Still, Trist's criticisms should not be taken lightly. Our affiliation with, or participation in, social systems, is not an all-or-none proposition. There are varying degrees to which we respond to different governing principles in our lives. Trist (1992) cites Ackoff's classification of organizations according to "what he calls 'nodality' and 'geneity'"(p. 125). This creates a spectrum from tight to loose couplings, where heterarchy would be an example beyond Angyal's descriptions. Another comparison might be with Maturana and Varela's (1992) notion of structural couplings. As they explain:

> In these interactions, the structure of the environment only triggers structural changes in the autopoietic unities (it does not specify or direct them), and vice versa for the environment… We speak of structural coupling whenever there is a history of recurrent interactions leading to the structural congruence between two (or more) systems (p. 75).

Rather than proposing to answer the question about first principles of human social systems, what has been provided should serve as an adequate foundation for a continuing discussion. If we think about something analogous to building social systems, it leads to concepts such as artificially replicating them. We might, for instance, think in terms of robots which act out familiar human roles in familiar ways. Establishing first principles there is conceivable. If we are concerned about purposefully creating the social systems in which we live, the complexity raises enormously. It may be that the ways in which we think about design are simply not yet adequate.

Dynamic systems

In dealing with human social systems (and truly, any real system), we are concerned with dynamic systems already in some state of development or evolution. Elements act as parts of systems to the degree that they are guided by the governing principle of the system. Systems also exist as parts of their relevant environments, and therefore respond to some degree to those governing principles as well. As described by Angyal (1941), this creates an ongoing balance between autonomy and heteronomy of the system. Systems can also reach varying states of homonomy with their environments, to the degree that all of the governing principles align.

If we design our world, can we build it?

As noted earlier, much of Western thinking about social structures has been dominated by assumptions of power, authority, hierarchies of organization, and so on. As noted by De Waal (2009), we need to be careful about those assumptions. But in thinking of terms such autonomy and heteronomy, what are the signals about governance to which we respond, relative to each of the systems of which we are parts? Religious organizations, for instance, are primarily systems of faith.

They also, though, provide strong social connections for regular contact, support, affiliation, etc. Work organizations are primarily systems of organizing labor, tied to the economy. But they, too, provide many social connections. Both religious and work organizations are embedded in cultural environments to which they respond in different ways, just as examples.

In dealing with human social systems, we also face the complexity of dealing with individuals (agents) who not only act with autonomy, but who conceptualize the world symbolically and adapt through learning. To assume direct causality between signal and response would be naïve. Alternately, though, there are relatively stable and long-standing patterns of human behavior. Individuals fight and die in response to cultural, religious, and national systems of beliefs.

If we attempt to purposefully create such a system, what process should we use? Most approaches to social systems design place a great deal of emphasis on the participation of stakeholders. Banathy (1996) stated this more clearly than most:

> When it comes to the design of social and societal systems of all kinds, it is the users, the people in the system, who are the experts. Nobody else has the right to design social systems for someone else. It is unethical to design social systems for someone else. Design cannot be legislated, it should not be bought from the expert, and it should not be copied from the design of others. If the privilege of and responsibility for design is "given away," others will take charge of designing our lives and our systems. They will shape our future. (p. 228)

While Banathy's (1996) ethical convictions are more strongly stated, Cross (2011) echoes the same presumptions about participation in design:

> Even engineering design, traditionally seen as a strictly technical process, is in reality a social process of interaction and negotiation between the different participants who each bring to bear their own 'object world' – their own specific knowledge and awareness of aspects of the object being designed. His [Larry Bucciarelli's] thesis is that 'the process of designing is a process of achieving consensus among participants with different "interests" in the design, and that those different interests are not reconcilable in object-world terms … The process is necessarily social and requires the participants to negotiate their differences and construct meaning through direct, and preferably face-to-face, exchange.' (Cross, p. 20)

Inherent in these ideas, though, are deeper assumptions about the role of participants and outcomes. In many industrial processes, design is separate from production. The plan which results from the design is handed off to other individuals or groups who are tasked with varying stages of implementation. Particularly in Banathy's (1996) concepts for the design of social systems, stakeholders were to be both the planners and implementers of design. (Many organizational theorists believe the same about work groups or teams.) The underlying belief has been that involvement leads to commitment. In some cases, that is true, but it is a dangerous assumption on which to build a world. It also assumes a great deal of rationality about the entire process, from design to implementation to behavior.

From a rational standpoint, a social system might be guided by rules of behavior for its constituents. In reality, as soon as rules are established, some individuals

will immediately begin finding ways either to avoid the rules or to manipulate them for their own gain. That is one of the creative aspects of agents which learn.

Goals for our systems

A critical question in considering design is the goals that we want to achieve. In this case, the key question may be the guiding principles around which we want our social systems to operate. This would influence not only the outcomes which are produced, but most likely the processes of design as well.

Attributes to consider as drivers of our systems could include fairness, equality, security, prosperity, peace, democracy, and justice. The problem is that these are not inclusive categories. Fairness, for instance, implies that each individual should get what is deserved – good or bad – according to some criteria. Equality implies that all individuals should get the same, regardless of their attributes or behaviors. Security implies a focus on the protection of what exists. Prosperity implies an increase in the acquisition of resources, but not necessarily in equal or fair distribution. Democracy is a process of equal decision-making by all, irrespective of individual attributes. Justice implies the upholding of some higher standards.

For thousands of years, we have thought about social structures as largely governed by rulers, whether that was the chief of a tribe, or the king, queen, or president of a country. As noted earlier, Plato proposed his own idealized social system nearly 2400 years ago. His primary concern was justice, and he believed that the ideal society rested upon the attributes of the rulers.

Plato and social systems

Plato (trans. 1973) thought in terms of social systems at the level of the state. States came into being out of collective need. "A State, I said, arises, as I conceive, out of the needs of mankind; no one is self-sufficing, but all of us have many wants… The barest notion of a State must include four or five men" (p. 53).

Within that, he anticipated the concept of division of labor:

> There are diversities of natures among us which are adapted to different occupations… We must infer that all things are produced more plentifully and easily and of a better quality when one man does one thing which is natural to him, and does it at the right time, and leaves other things (p. 54)

This notion of a natural order plays heavily into Plato's (trans. 1973) ideals for the state, and is part of his concept of justice. As he proposed, "our State, if rightly ordered, is perfect" (p. 117); and "that one man should practise one thing only,

the thing to which his nature was best adapted;—now justice is this principle or a part of it" (pp. 122-123).

Following the concept of *diversities of nature*, Plato believed that some people were naturally more suited as rulers than others. He is renowned for proposing the concept of the philosopher-king.

> Until philosophers are kings, or the kings and princes of this world have the spirit and power of philosophy, and political greatness and wisdom meet in one…then only will this our State have a possibility of life and behold the light of day (p. 166).

For Plato (trans. 1973), philosophers are those "who are lovers of the vision of truth" (p. 168). Future rulers were to be "by nature [lovers] of wisdom and knowledge;" and to unite in themselves "philosophy and spirit and swiftness and strength" (p. 61).

In order to produce such individuals, Plato (trans. 1973) proposed a combination of selective breeding and education. Some of the practices he suggested would seem draconian today, or even associated with the worst of racist beliefs. For instance:

> God proclaims as a first principle to the rulers, and above all else, that there is nothing which they should so anxiously guard, or of which they are to be such good guardians, as of the purity of the race (p. 105).

He went on to describe "gold and silver parents" contrasted with "brass and iron" (p. 105). His notion of purity of the race extended even to the suggestion that, "the offspring of the inferior, or the better when they chance to be deformed, will be put away in some mysterious, unknown place, as they should be" (p. 151).

Selecting the best individuals, though, did not presume that they would mature into the best rulers. Plato (trans. 1973) saw their potential going in both positive and negative directions, as he explained:

> Our philosopher follows the same analogy—he is like a plant which, having proper nurture, must necessarily grow and mature into all virtue, but, if sown and planted in an alien soil, becomes the most noxious of all weeds, unless he be preserved by some divine power (p. 182).

As for education, Plato (trans. 1973) was clear that there were two important subjects: "gymnastic for the body, and music for the soul" (62). These aligned with the "the two principles of human nature, one the spirited and the other the philosophical" (p. 101).

This was not, as many might imagine, though, a caste system, or one of royal bloodlines. The "inferior" offspring of rulers were to be "degraded" and the "naturally superior" offspring of lower classes were to be elevated, according to the natural order (Plato, trans. 1973, p. 112).

Education was seen as a means for improving the race as well:

> The State, if once started well, moves with accumulating force like a wheel. For good nurture and education implant good constitutions, and these good constitutions taking root in a good education improve more and more, and this improvement affects the breed in man as in other animals (p. 112).

Moreover, despite historic assumptions about the role of women, Plato (trans. 1973) advocated some level equality both in education, and in military service. As he explained, "if the difference consists only in women bearing and men begetting children, this does not amount to a proof that a woman differs from a man in respect of the sort of education she should receive" (p. 144). Women were to be allowed to "share in the toils of war and the defence of their country; only in the distribution of labors the lighter are to be assigned to the women, who are the weaker natures, but in other respects their duties are to be the same" (p. 147).

On one level, Plato appears to have been an elitist to an extreme degree. That was not reflected in the individual lifestyles of the rulers he described, though.

In the kind of society that Plato envisioned he saw taking the role a ruler to be a necessary burden rather than a powerful privilege. That required rulers who were selfless in their devotion to the good of others. Finding individuals willing to fill such a role meant not only finding and nurturing the right characteristics, but also motivating those individuals to serve.

Due to both nature and upbringing, the ideal ruler would not have been motivated by money or recognition, and would not have sought out a role in public office. They would therefore have to be pressed into service through fear of punishment. But as Plato (trans. 1973) explained, "*the worst part of the punishment is that he who refuses to rule is liable to be ruled by one who is worse than himself*" [emphasis added] (p. 31).

After all of this, the result of the selection and training was to be a life of austerity and sacrifice – the ultimate servant-leader. These guardians of the state were not to own private property of any kind. What they did own was only what would have been customary for a soldier. They would receive pay, but again, only similar to that for a soldier; just enough to live on. They were not to own, or even touch, gold or silver. "The diviner metal is within them, and they…ought not to pollute the divine by any such earthly admixture …" (Plato, trans. 1973, p. 106).

While this may sound like the vow of poverty, similar to that of a monk or priest, rulers were not denied marital relationships. The form of those relationships, though, was in keeping with a focus on the "good of the state." It was the ultimate commune. "The conclusion [was] that in the perfect State wives and children are to be in common; and that all education and the pursuits of war and peace are also to be common" (Plato, trans. 1973, p. 234).

For Plato, creating ideal rulers seemed to be virtually synonymous with creating an ideal state. As noted, they were highly interdependent. The proper environment and education had to be created in order for the desired qualities to mature, and creating such an environment was thought to improve the society as a whole.

What appear to be radical views, regarding both elite individuals and communal rights and responsibilities, take on a different tone in light of their relationship to state. This might be seen a Plato's version of the relationship between system and environment, or Angyal (1941) described it, between autonomy and heteronomy. As Plato (trans. 1973) expressed this, "justice, which is the subject of our

inquiry, is, as you know, sometimes spoken of as the virtue of an individual, and sometimes as the virtue of a State" (p. 52). As regards first principles, for Plato, states were not formed from oak or rock (his analogies), but "the States are as men are, they grow out of human characters" (p. 235).

Moving from the individual to the state, at one level, Plato (trans. 1973) envisioned the potential for a tranquil existence in which:

> [Citizens] and their children will feast, drinking of the wine which they have made, wearing garlands on their heads, and hymning the praises of the gods, in happy converse with one another. And they will take care that their families do not exceed their means; having an eye to poverty or war (p. 56).

As to the ideal size of the state which Plato (trans. 1973) envisioned, he said simply, "I would allow the State to increase so far as is consistent with unity; that, I think, is the proper limit" (p. 112).

He compared this, though, to the creation of a luxurious state, where all manner of material delights were available. The result would be that "we must enlarge our borders; for the original healthy State is no longer sufficient. Now will the city have to fill and swell with a multitude of callings which are not required by any natural want" (p. 57). The outcome of continued growth and the need for excessive accumulation of wealth was war.

As for the governance structures of the state, Plato (trans. 1973) became more pragmatic regarding the forms which already existed. There were, in his view, five examples of governance, which reflected five "forms of the soul" (p. 137). Interestingly, he describes these in terms of how they tend to devolve from higher to lower forms.

Aristocracy (the government of the best) represents the ideal to which Plato strived. Much has already been said about his ideals for this type of society. Over time, conflicts would arise between the different classes in society about material wealth. The end would be the division of land and houses into individual ownership, and the neglect and even enslavement of the regular populace. This created *timocracy* (the government of honor) – a half-way point between aristocracy and oligarchy. In structure it would appear much as aristocracy, but with rulers who were less ideal and more inclined towards war and the possession of wealth.

Plato (trans. 1973) even explains the deterioration of character which tended to create timocracy. His example is that of a young person raised in a family where the mother criticizes the father as being inadequate in social standing and wealth. The conflict that this creates in the young person leads him to try to overcome his father's deficiencies in his own adulthood, and this focuses on wealth rather than virtue.

The deterioration in character of rulers then leads to oligarchy, "a government resting on a valuation of property, in which the rich have power and the poor man is deprived of it" (Plato, trans. 1973, p. 241). The concern for individual wealth becomes greater than the concern for the law, and these values spread through the society. Disparity in wealth grows, and eventually even citizenship is awarded only to those who can afford it. "They allow no one whose property falls below the

amount fixed to have any share in the government" (p. 242). Ultimately, there are two states rather than one; the poor state and the rich state, always in conflict. At that point, protecting the state as a whole becomes a problem. If the rulers arm the general populace they could face more internal than external threat. If they do not arm them, they face the prospect of having to fight an overwhelming external army themselves. "And at the same time their fondness for money makes them unwilling to pay taxes" (p. 243).

As the oligarchy deteriorates, new social classes seem to appear. Upper classes that had only lived off the state become drones. People who formerly had wealth lose all property, but remain within the state. Paupers and criminals appear, and in an oligarchical state, "nearly everybody is a pauper who is not a ruler" (p. 244).

As rulers increasingly focus on their personal wealth, the character of the state degrades. The next form of governance to emerge is democracy, by which Plato (trans. 1973) means essentially a society functioning around the basest of human nature. "In democracies almost everything is managed by the drones" (p. 257). It is a culture lacking virtue or self-discipline. Rulers "refuse to curtail by law the extravagance of the spend-thrift youth because they gain by their ruin" (p. 247); that is, the youth become merely a part of the economy. In the end, the typical youth in such a society, "lives from day to day indulging the appetite of the hour… His life has neither law nor order; and this distracted existence he terms joy and bliss and freedom; and so he goes on" (p. 254). There is no virtue and no respect for authority. In the end, "the excess of liberty, whether in States or individuals, seems only to pass into excess of slavery" (p. 257).

The final state of governance is tyranny, in which Plato (trans. 1973) aptly describes the typical ruler:

> At first, in the early days of his power, he is full of smiles, and he salutes every one whom he meets…making promises in public and also in private liberating debtors, and distributing land to the people and his followers, and wanting to be so kind and good to every one… But when he has disposed of foreign enemies by conquest or treaty, and there is nothing to fear from them, then he is always stirring up some war or other, in order that the people may require a leader (p. 260).

In the end, even tyranny becomes its own ruin. As Plato (trans. 1973) explains it, the tyrant becomes a prisoner of his own condition. He can truly trust no one and therefore tends to isolate himself. More specifically:

> He has desires which he is utterly unable to satisfy, and has more wants than any one, and is truly poor, if you know how to inspect the whole soul of him: all his life long he is beset with fear and is full of convulsions and distractions, even as the State which he resembles… (p. 273).

Plato's (1973) ideal state never existed except in theory. It was his hope that, "if philosophy ever finds in the State that perfection which she herself is, then will be seen that she is in truth divine, and that all other things, whether natures of men or institutions, are but human…" (p. 188).

Making sense of Plato's ideas also requires some context. He lived during the classical period – the Golden Age – of Athens. It was a time of beautiful art and

architecture, but also a time of wars between city-states. Maybe most importantly, it was a time of tremendous ideas emerging around the world.

The classical period of Athens set the stage for modern science, in trying to understand the natural world through principles of nature rather than purely mystical sources. According to Tarnas (1991), Thales and his followers…

> made the remarkable assumption that an underlying rational unity and order existed within the flux and variety of the world, and established for themselves the task of discovering a simple fundamental principle…that both governed nature and composed its basic substance (p. 19).

Succeeding theorists, like Democritus, furthered those ideas into concepts such as atomism, the idea that "All human knowledge was derived simply from the impact of the material atoms on the senses" (Tarnas, 1991, p. 22).

The end of the fifth century B.C. saw the rise of the Sophists. They continued the intellectual development which was characteristic of that day, but with an emphasis on humanism. As Tarnas (1991) captured it, "The ultimate value of any belief or opinion could be judged only by its practical utility in serving an individual's needs in life" (p. 27). Knowledge also became independent and subjective. There were no absolute truths.

The Sophists became popular as teachers and their views spread. The implications of these new ideas, though, were not just philosophical, they were also ethical. Tarnas' (1991) description helps to explain the concerns that Plato (trans. 1973) expressed. Rather than education being focused on the development of character, students learned to formulate arguments to support most any position, moral or not. As Tarnas describes the situation which developed:

> More concretely disturbing was the concurrent deterioration of the political and ethical situation in Athens to the point of crisis – the democracy turning fickle and corrupt, the consequent takeover by a ruthless oligarchy, the Athenian leadership of Greece becoming tyrannical, wars begun in arrogance ending in disaster (p. 30).

Plato witnessed the rise of human brilliance and the deterioration of human societies. Much of his struggle seems to have been in trying to reconcile the potential for perfect order with the realities of imperfection and chaos.

As described by Tarnas (1991), that struggle was most represented through the study of astronomy. Humans had long perceived the contrast between the perfect order of the heavens (the predictable movement of the moon and stars, and other bodies in space) and the often-unpredictable vagaries of weather, pestilence, fate, and so on, which dominated human life on Earth.

Plato's intellectual and philosophical heritage came down through Pythagoras, who saw mathematical patterns as representative of divine order. As stated by Tarnas (1991), "To uncover the regulative mathematical forms in nature was to reveal the divine intelligence itself, governing its creation with transcendent perfection and order" (p. 46).

The human search for truth and perfection, and the willingness for self-sacrifice in order to pursue those goals, was embodied in Plato's teacher, Socrates. He was,

apparently, the model for the philosopher-ruler that Plato described. He was the recreation of the ancient Greek hero (Tarnas, 1991).

A question of relevance

Are Plato's ideals worth considering today? Readers will interpret his concepts in different ways. Some may dismiss them outright as being ancient and idealistic; as having no true relevance. Technologically, a great deal has changed in the last 2400 years. Socially and politically, there are many similarities.

We still live in a world defined largely by sovereign nation-states, or countries. They constitute the legal boundaries for rights to land. They are the recognized, legitimate authorities for economies, militaries, laws and courts, etc. They define the rights and responsibilities for their citizens, they engage in official treaties and trade agreements, and they still wage wars as means of resolving disputes.

There are currently 193 members of the United Nations, and two official observer states (Vatican City and Palestine). The International Standards Organization (ISO), by contrast, lists 249 countries, dependent territories, and special areas of geographical interest (ISO 3166-1) for inclusion in their coding system. The World Factbook of the U.S. Central Intelligence Agency includes 226 sovereign states ("CIA - The World Factbook," n.d.).

By comparison with Plato's five forms of government, the CIA World Factbook (n.d.) lists approximately 50 variations and combinations. Those include constitutional democracies, monarchies and republics; democratic and federal republics; parliamentary structures involving democracies, republics and commonwealths; five remaining Communist states (including North Korea, also a dictatorship); three pure monarchies; and the most common, pure republics.

As noted, they are the internationally recognized bodies of the world. All are intended to establish some form of stability, to create and protect valuable resources, and so on. They do not, however, represent all of the relevant entities and actors to which people respond or feel a sense of loyalty – not by a long shot.

A paper published as a result of a series of seminars on the role of nonstate actors in international politics ("Nonstate Actors", 2007), describes a wide range of influential entities which they define as follows:

> Nonstate actors are non-sovereign entities that exercise significant economic, political, or social power and influence at a national, and in some cases international, level. There is no consensus on the members of this category, and some definitions include trade unions, community organizations, religious institutions, ethnic groupings, and universities… (p. 2).

They go on to give examples of such actors, including multi-national corporations, nongovernmental organizations, and super-empowered individuals.

As one of the largest corporations in the world, ExxonMobil is an interesting example of a multi-national corporation. According to Coll (2012), ExxonMobil

effectively operated at the level of a nation-state. As he describes the corporation which was created from the merger of Exxon and Mobil in 1999:

> A United Nations analysis, designed to calculate by more subtle measures the relative economic influence of particular companies and nations, concluded that ExxonMobil ranked forty-fifth on the list of the top one hundred economic entities in the world, including national governments, during its first year. Its net profit along – $17.1 billion that inaugural year – was greater than the gross domestic product of more than one hundred nation-states, from Latvia to Kenya to Jordan (p. 66).

Coll (2012) compares the influence of Lee Raymond, CEO of ExxonMobil at the time, with then-U.S. Vice President Dick Chaney:

> In protocol, power, and habit of mind, Raymond and Chaney were each, in effect, deputy heads of state – when they traveled, they met with kings and presidents, and perhaps ministers or chiefs of national oil companies, but rarely with anyone less powerful (p. 70).

Coll (2012) describes a meeting in Washington, D. C., at which Lee Raymond was asked about building more refineries in the U.S., as a matter of helping protect the country against energy shortages. His reply was, "'I'm not a U.S. company and I don't make decisions based on what's good for the U.S.'" (p. 71). As Coll goes on to explain, ExxonMobil essentially developed its own foreign policies, in line with its need for securing reserves of crude oil (the essential factor affecting its stock price.) As oil reserves became increasingly nationalized, owned by nation-companies such as Saudi Aramco, ExxonMobil found itself negotiating with dictators in order to acquire new reserves.

ExxonMobil obviously was not, and is not, a recognized legitimate state, despite its size and wealth. It is, though, one of many large and powerful influences on recognized states. As noted by Coll (2012), ExxonMobil had easy and direct access to decision-makers in Washington, including the White House. In 2001 alone, it spent $6 million on lobbying efforts, largely for its own fulltime staff of employees devoted to influencing energy policies. Because of its global position it was also closely tied with national security agencies.

The reverse of this independent corporate status is also true. As noted in an article by The Economist (The East India Company, 2011):

> State-controlled companies account for 80% of the market capitalisation of the Chinese stockmarket, more than 60% of Russia's, and 35% of Brazil's. They make up 19 of the world's 100 biggest multinational companies and 28 of the top 100 among emerging markets (par. 4)

As explained in the article, the East India Company, chartered in 1600, actually created the model for such companies. While not government-owned, per se, many of its investors were British politicians, and regular "gifts" to politicians were required in order to maintain its standing, and its monopoly rights on trade in the territories where it operated. By 1800, the company had grown into an entity which had its own standing army of 200,000 soldiers; ruled India (a country of 90 million people); controlled 70 million acres of land, and issued its own currency.

Super-empowered individuals have taken on new prominence in recent years, influencing issues at an international level. Many of them have promoted and/or funded humanitarian efforts. That list includes former U.S. Presidents Jimmy Carter and Bill Clinton. It also includes wealthy individuals such as Bill Gates and George Soros, and a long list of Hollywood actors and other entertainment stars. Other world figures such as Nelson Mandela have inspired us, and affected our views. In addition, there have been individuals promoting terrorism at an international scale, using inexpensive social media, to great effect. They are the "freedom fighters" for some.

The importance of the influence of super-empowered individuals is dramatized in a recent presentation and book by Lawrence Lessig (2011), a Harvard Law School professor. The problem in the U.S., as in many other countries, is the lack real democracy, even in those countries in which it is professed. As Lessig explains, there are essentially two election cycles for every official election. The first is the selection of the candidates by the political parties. The populace gets to vote only in the second cycle, and only for the candidates vetted by the parties.

Largely because of the cost of media advertising needed to become a viable candidate, one of the prime characteristics of a good politician is the ability to raise money. Even after being elected, that need does not stop. According to Lessig (2011), U.S. representatives spend between 30% and 70% of their full-time schedules involved in ongoing fundraising, in order to be prepared for the next election cycle.

Here, the influence of super-empowered individuals becomes critical. As Lessig (2011) explains, in the 2010 election cycle only 0.26 percent (just over one quarter of one percent) of Americans donated $200 or more to any congressional candidate. Only 0.05 percent donated the maximum of $2400 to any candidate. And only 0.00024% (750 Americans) gave $100,000 or more to any combination of federal candidates. The great majority of these individuals were associated with the financial industry.

These are still not the super-empowered, though. To understand that level of influence you have to know about Super-PACs (meaning *super political action committees*, or technically, *independent expenditure-only committees*.) Super PACs were legally created in 2010 legislation, allowing for organizations which "may raise unlimited sums of money from corporations, unions, associations and individuals, then spend unlimited sums to overtly advocate for or against political candidates" ("Super PACs," n.d.). In the 2012 election cycle, 99 individuals gave 60% of the Super PAC money which was spent. According to a report in the Los Angeles Times ("Super PAC spending," 2012), 266 Super PACs spent $546.5 million in that cycle, mostly opposing candidates that they wanted to defeat.

Lessig (2011) goes on to explain that, in his view, it is the entire system which has become corrupted, relative to what was intended by the framers of the U.S. Constitution. The system no longer promotes democracy. Instead, it seems to attract donors who want to influence legislation for their own gain, and representatives who are individually ambitious. Between 1999 and 2004, 50% of Senators

and 42% of House members left to become lobbyists (people paid to influence legislation.) The average increase in salary for the 12 House members studied was 1,452%.

At the same time, according to polling data by the Gallup organization (Brown, 2013), approval ratings for the US Congress are at historic lows. As of April, 2013, nearly 80% of the American public disapproved of the job that the political representatives were doing. The approval rating has not been above 25% since November of 2009.

The connection between money and power is certainly not restricted the U.S., of course. A New York Times article (Barboza, 2012) reported significant accumulation of wealth by the family of the Chinese Prime Minister.

> Many relatives of Wen Jiabao, including his son, daughter, younger brother and brother-in-law, have become extraordinarily wealthy during his leadership, an investigation by The New York Times shows. A review of corporate and regulatory records indicates that the prime minister's relatives — some of whom, including his wife, have a knack for aggressive deal making — have controlled assets worth at least $2.7 billion (par. 4)

We are a long way from Plato's ideal of the servant-leader, philosopher-king.

Are there broader implications of these issues? The paper referenced earlier ("Nonstate Actors," 2007) divides the nations of the world into three categories: "weak states, modernizing states, and developed/post-industrial states" (p. 4). As the paper elaborates:

> Weak states tend to be former colonial holdings that never made the transition to viable nationstate. Such governments as exist struggle to provide order to society, and will often resort to force in an effort to do so. Ethno-religious and tribal factionalism predominate over nationalism. Examples include Afghanistan, Somalia, Lebanon, Congo, and a host of others (p. 5).

Modernizing states represent 80% of the current nations ("Nonstate Actors," 2007). They tend to be highly centralized and bureaucratic; to suppress minority views; and to have significant overlap between government and economic interests. Examples include the BRIC countries (Brazil, Russian, India and China.)

Developed/post-industrial states have moved beyond a traditional sense of nationalism and absolute borders. The prime example there is the European Union.

North Korea is the most recent and extreme example of an absolute form of government. Power passed from the country's founder, Kim Il Sung, to his son, Kim Jong Il, and now to the next heir, Kim Jong Un, in unbroken succession. What began as rules for creating an independent, self-sufficient country turned into a system in which the ruling Kim at the time is (according to many accounts) worshipped as a god-like figure. Massive portions of the economy are spent in devotion to the ruler, and to the military, while the majority of the citizens live in abject poverty. News media and education are tightly controlled, and power is absolutely centralized.

According to Lee (2003), there were three essential tenets on which North Korea was founded: political independence, economic self-reliance, and military de-

fense. Instilling these values in order to establish and strengthen the country put Kim Il Sung, its founder, in absolute control. As Lee explains,

> Kim Il Sung was the only one who could successfully wield and implement the philosophy. Thus, implementing and executing policies based on juche effectively consolidated Kim Il Sung's absolute political power and indirectly provided ideological justification for his dictatorship in North Korea (p. 108).

Deeper, there is a strong philosophical underpinning to juche. As Lee (2003) describes this:

> The *juche* idea is a *Weltanschauung*, or world view, that affirms the penultimate value of man's interests. According to *juche* ideology, man has ultimate control over the world and of his own destiny because he alone has *chajusong*, or creativity and consciousness. Adherents to the *juche* philosophy claim that this viewpoint of man as dominating and reshaping the world is a unique contribution of *juche* ideology to the body of philosophical knowledge (p. 109).

It is of no small interest that North Korea (the Democratic People's Republic of Korea) stands in such stark contrast to its neighbor, South Korea (the Republic of Korea), considered one of the *Asian Tiger* economies due to its rapid economic and social development since the 1980s. By culture and language, they are one people, but the lives they lead could hardly be more different.

South Korea began as a military dictatorship under the rule of Park Chung-hee. Its economic rise has been credited in various ways to *chaebol*, or large, industrial conglomerates such as Samsung and Hyundai. These firms began as family-owned operations with strong ties to the government, which helped to direct both foreign investment and technological assistance to them. There were challenges and criticisms about excessive power, poor relationships with labor unions, and the collapse of some large corporations in the financial crisis of 2008-2009. Today, South Korea is a member of the Organization for Economic Cooperation and Development (OECD), and its ranking in terms of democracy is on par with Japan. Their education system is excellent, and they are often considered a model of modern economic development.

According to an analysis by The Economist ("South Korea's economy," 2011), "the Korean model had four distinctive features: a Stakhanovite workforce [exceedingly productive]; powerful conglomerates; relatively weak smaller firms; and high social cohesion" (p. 2). As in many cases, though, strengths can become weaknesses. The *chaebol* are prone to corruption in order to maintain power. They attract the best and brightest graduates, which creates much weaker small firms, and also stifles innovation and entrepreneurship. South Korea's population is aging rapidly, and their elderly are three times as likely to be poor as in other OECD countries ("South Korea's economy,").

The rise of cities

There is another category that falls outside of the traditional nation-state, and yet is not exactly a non-state actor. The modern city plays a somewhat unique role in social systems today.

More than half of the world's population now lives in cities. Two recent reports by the McKinsey Global Institute (MGI, 2011, 2012) focus on the growing economic importance of cities, and more specifically on what they term the City 600, defined as "the top 600 cities by contribution to global GDP growth from 2007 to 2025".

According to the MGI reports, cities in general already create 80% of global gross domestic product (GDP). Just 600 urban centers, though, account for 20% of the total population, and over half of global GDP. By 2025, there will still be 600 top cities, hosting 25% of the population, creating 60% of GDP. The critical change, though, is that it will not be the same 600 cities. According to MGI (2011), "By 2025, we expect 136 new cities to enter the top 600, all of them from the developing world and overwhelmingly (100 new cities) from China" (p. 1).

The current largest megacities (e.g. Tokyo, New York, London, Beijing, and Shanghai) are forecast to remain major economic centers. The greatest percentage of growth, though, will come from what MGI terms middleweight cities, currently between 150,000 and ten million inhabitants. Most of those will be in what are, at present, still developing regions of the world.

This rise of cities in the world presents both opportunities and potential problems. The challenge for social system design is summarized in the second MGI report (2012):

> Cities can be part of the solution to such stresses, as concentrated population center can be more productive in their resource use than areas that are more sparsely populated. But if cities fail to invest in a way that keeps abreast of the rising needs of their growing populations, they may lock in inefficient, costly practices that will become constraints to sustained growth later on. How countries and cities meet this rising urban demand therefore matters a great deal. Beyond the direct impact of the investment, their choices will have broad effects on global demand for resources, capital investment, and labor market outcomes (p. 2).

Just to note, the focus on cities has been growing for some time. IBM's original concept of Smarter Cities shifted towards a strategy on Smarter Cities, helping to bring the power of technology to the improvement of efficiencies in many kinds of services and infrastructure, from health care, to energy, to transportation, and so on.

Nation-building

For better, and sometimes for worse, we are actively engage in the creation and perpetuation of social systems every day. If we didn't participate, they wouldn't exist. We rarely think, though, about how we create them, consciously or not.

If we do happen to think about what we create, it tends to be in terms of specific disciplines such as architecture, urban planning, economic development, or maybe systems engineering. Design is connected to all of those, but not always directly – and rarely, if ever, at the scales which we have been describing here.

The closest that we may have come in recent centuries is through colonization. Rather than simply invading and enslaving another state, empires established new forms of governance in those states. A great many of our nations today emerged from being former British, Spanish, or French colonies.

Imposing new rules or laws on a people may elicit compliance, at least for a time. Reflecting back to Angyal's (1941) concepts of autonomy and heteronomy, an absolute autocracy is essentially absolute heteronomy (external governance). It creates what might be considered a *hive mind*, living out roles like insects in a colony, occasionally swarming in response to cues. It is difficult to keep humans living at that level, even if it were morally acceptable.

The human world today is a complex array of cultures and ideologies, intertwined with economic and political entities. Aboriginal tribes in Australia still maintain practices estimated to be 60,000 years old. The number and age of indigenous ethnic groups in Africa is hard to estimate. Chinese and Indian cultures date back more than 5000 years. Hinduism may be 4000 years old, with ancient roots much earlier. Buddhism, Confucianism, and Taoism, as well as the Greek roots of modern science, are 2300 to 2500 years old, or so. Christianity appeared 2000 years ago, and Islam about 600 years later.

India is comprised of 35 states and territories speaking 22 official languages. Afghanistan has 14 distinct ethnic groups. In the modern megacities of the world, you find some variation of almost all of these differences: language, ethnicity, ideology, economic diversity, and so on.

This is all academic, until we face the implications for designing social systems.

In terms of artificially creating structural order in a state, colonization has been replaced by nation-building, or state-building. It is the means through which stronger countries attempt to establish favorable governance structures in places they deem necessary. According to Fukuyama (2004),

> The fact is that the chief threats to [the U.S.] and to world order come today from weak, collapsed, or failed states. Weak or absent government institutions in developing countries form the thread linking terrorism, refugees, AIDS, and global poverty (p. 1.)

As he further explains, "What we are really talking about is state-building—that is, creating or strengthening such government institutions as armies, police forces, judiciaries, central banks, tax-collection agencies, health and education

systems, and the like" (p. 2). The problem, however, is that "no one has solved the more serious problem of how to implement the second phase of nation-building—the transition to self-sustaining indigenous institutions" (p. 6).

In the best cases, nations peacefully depose the rulers they no longer find adequate and replace them. Transitions of governments are expected in democratically-elected regimes.

In many cases, though, rulers do not leave so quietly. Hosni Mubarak stepped down as the President of Egypt in 2011, following large-scale protests, and was later replaced by Mohammed Morsi, the candidate of the Muslim Brotherhood. Morsi was later ousted in a military coup, and then the Muslim Brotherhood banned by the Egyptian courts.

Muammar al-Gaddafi managed to seize power in Libya through a bloodless coup in 1969, only to be killed in an uprising in 2011. The insurgents in that case were supported by NATO troops. Bashar Hafez al-Assad continues to wage what has become a civil war in Syria, with regional and international interests taking sides and offering support and assistance, hoping to influence the outcome.

The most extreme cases, of course, involve direct military overthrow of a government, as in the U.S. invasions of Afghanistan in 2001, and Iraq in 2003, following the September 11, 2001 attacks in the U.S.

The corollary to nation-building is often counterinsurgency, as described in a Field Manual of the U.S. Marine Corp:

> An insurgency is an organized, protracted politico-military struggle designed to weaken the control and legitimacy of an established government, occupying power, or other political authority while increasing insurgent control. Counterinsurgency is military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency… Political power is the central issue in insurgencies and counterinsurgencies; each side aims to get the people to accept its governance or authority as legitimate. Insurgents use all available tools—political (including diplomatic), informational (including appeals to religious, ethnic, or ideological beliefs), military, and economic—to overthrow the existing authority… Long-term success in COIN depends on the people taking charge of their own affairs and consenting to the government's rule (Counterinsurgency, 2006, p. 1)

To be clear, the U.S. Military had not initially approached either Afghanistan or Iraq as targets of counterinsurgency. While the concepts had been around for some time, they harkened back to frustrating losses from the Vietnam War, and the deep emotional wounds that had been left. It was only through the work of a small group of different-thinking military officers that the concept was applied to these current wars (Kaplan, 2013).

The building part of nation-building had long been an entirely separate effort, conducted through assistance and relief agencies, such as the U.S. Agency for International Development. In military terms, the needed work was sometimes referred to as *winning hearts and minds*. This is similar to a concept from Joseph Nye of Harvard, called soft power – persuasion through positive aspects, such as admiration and imitation of another culture.

The notable problem that General David Patraeus and his colleagues recognized was the aftermath of the battle. If you defeated the enemy, what was left? How did you now create a functional, stable society?

Counterinsurgency wisdom says that you leave soldiers in place until you reduce local violence. Eventually, local leaders emerge and order takes over.

A glaring omission in counterinsurgency planning would seem to be the larger concept of social systems design. If the goal is the conscious creation of a self-sustaining state with the potential to engage with other world nations, what might that look like from the beginning? In order even to begin, there has to be some sense of creating social systems – not just building and bridges, or power plants, or aid for starting businesses and trade. There has to be some understanding about the first principles from which human systems might be created.

According to Kaplan (2013), what remained in Iraq after the ouster of Saddam Hussein were the long-standing rivalries between Sunni and Shiite Muslims. These further splintered into warring groups. A key problem in the attempted rebuilding was that the Shiite-dominated Iraqi government itself was just another warring faction.

Similar problems arose in Afghanistan. Hamid Karzai was strongly supported by the coalition of Western countries, and elected to head the new government. Unfortunately, he lacked real legitimacy with the Afghan people, and the further his leadership deteriorated the stronger support for the Taliban regained. As the officially elected president, though, he was the legitimate head of state with whom other national leaders had to deal.

As of the writing of this chapter, the civil war in Syria has overtaken news headlines. There, the presidency has remained in the hands of the same family for four decades – again, a minority Shia-backed government ruling a majority Sunni population (Stack 2013). Peaceful demonstrations which began with the Arab Spring in 2011 resulted in a violent response by the government and apparent use of chemical weapons on its own citizens.

There are massive issues of very complex realities that we will continue to have to face. There are calls for regime change in Syria, but with the threat of it becoming much like Iraq or Afghanistan; places ongoing instability and lack of governance.

Similarly, some would advocate for a change of government in North Korea. It has long been considered a rogue state and with the entry of a new young leader, still in his 20s and apparently full of hubris, it presents challenges – if not immediate threats – to other nations. Given its proximity to South Korea, and both the commonalties and contrasts noted earlier, could the two not just be joined into one prosperous nation?

Germany might offer caution. According to a report by the New York Times (Kulish, 2012), the former West Germany has invested the equivalent of $2 trillion over the last 23 years, attempting to incorporate what was East Germany into a unified economy and social structure. And it still has a great deal of work to go.

In all likelihood, that would be an easy task compared to the social structure and economy of North Korea.

More broadly, costs are an issue. The cost of arming and supporting one U.S. soldier in Afghanistan was reported to be $750,000 per year (Kaplan, 2013). Leaving tens of thousands of soldiers in foreign countries at that cost is simply unsustainable. (The cost of one Afghan soldier, by contrast, was $12,000.) Estimates of costs to U.S. taxpayers for the wars in Iraq and Afghanistan begin at well over $1 trillion, and escalate rapidly depending on the variables included (e.g. future payments to soldiers and dependents for medical care, etc.)

Fundamentally, it is much easier to destroy than to build. It is one of the dark aspects of technology. Estimates of the cost for producing an improvised explosive device (IED) used in Iraq or Afghanistan vary, but by 2009 a Pentagon source put it at only $265 (Ackerman, 2011). (As expertise and production increased, costs decreased.) The costs of the pressure cooker bombs used by two young extremists at the Boston Marathon – for which the instructions were easily available through the Internet – were about $100. Two of those devices killed three people and injured well over 200.

Human ingenuity knows few bounds, especially when it is fueled by passion or hatred. Training terrorists to hijack and crash jetliners cost almost nothing compared to the destruction that resulted on September 11, 2001. Developing a shoe bomb created the next tidal wave of reaction. The budget for the Transportation Security Administration (those people responsible for all of the airport screening, amongst other things) – just one part of the U.S. Department of Homeland Security – was $7.9 billion in 2013 ("Budget-in-Brief," 2014).

The U.S., of course, has thus far experienced nothing relative to the violence which occurs in other places around the world. The availability and simplicity of explosive devices only exacerbates the problems. Making highly sophisticated shoulder-fired missiles means that most any adolescent, with a little training, could use one. The latest state-of-the-art drone technology is bound to start showing up in undesirable places in the near future, mandating the development of anti-drone technologies. Cyber-attacks on high stakes targets, including security and financial institutions, are only likely to increase as well.

The costs of violence and disruption are not incidental. Assigning exact figures to them is difficult, and in the end not the most important factor. The simple correlation is that highly unstable social environments are not likely to attract investment capital or innovative people, or families seeking stable lives. High risk also demands high rewards, meaning that the associated costs rise, too.

Wealth and happiness

An assumption of capitalism has been that improving economic conditions lead to improved satisfaction. There is logic to the argument, in that declining eco-

nomic conditions certainly seem to make people unhappy. Presidents and other heads of state tend to have current economic conditions reflected in their approval ratings, as if they were responsible or could directly change the economy. Failing banks and job layoffs, in the extreme, send people into the streets to protest. Improving economies tend to pacify people – at least for a time.

Broader implications come into play when these assumptions are applied in global fashion (literally.) Western approaches to *helping* other nations, whether through military and political intervention, or simply through monetary aid and technical assistance, frequently focus on ending with improving economies. Usually, that implies creating industrial or technical jobs which can feed exports and links to regional or global trade.

There are two important points about wealth and satisfaction which need to be understood. The first is known as the Easterlin Paradox, or the happiness-income paradox, first described in 1974. This is summarized by Easterlin and Agelescu (2009), as follows: "at a point in time happiness varies directly with income, but over time happiness does not increase when a country's income increases" (p. 2). If you live in poverty and your income rises so that you begin having predictable supplies of food, shelter, clothing, and so on, income is a pretty direct factor. If you have at least a basic standard of living, the rest becomes relative. How are you doing in relation to other people, against whom you compare yourself?

The second point is that income disparity does matter. As explained by Muller (2013):

> Inequality is indeed increasing almost everywhere in the postindustrial capitalist world. But despite what many on the left think, this is not the result of politics, nor is politics likely to reverse it, for the problem is more deeply rooted and intractable than generally recognized. Inequality is an inevitable product of capitalist activity, and expanding equality of opportunity only increases it -- because some individuals and communities are simply better able than others to exploit the opportunities for development and advancement that capitalism affords. Despite what many on the right think, however, this is a problem for everybody, not just those who are doing poorly or those who are ideologically committed to egalitarianism -- because if left unaddressed, rising inequality and economic insecurity can erode social order and generate a populist backlash against the capitalist system at large (par. 2)

Economics is important, but not by itself. Amongst the many types of data which the Organization for Economic Cooperation and Development (OECD) produces, they have begun compiling a Better Life Index ("OECD Better Life Index," n.d.) The major categories evaluated in the index include: housing, incomes, jobs, community, education, environment, civic engagement, health, life satisfaction, safety, and work-life balance. As reported in the Wall Street Journal (Curran, 2013), Australia has been ranked the happiest industrialized country in the world for the third year in a row. That puts it ahead of Sweden, Canada, Norway, and Switzerland – and in sixth place – the United States.

Still, the WSJ report attributes the overall ranking to Australia's economy, including the fact that it has not had an economic recession in 21 years. Australians reported having less work-life balance than average OECD countries, and less lei-

sure time. On balance, 85% report being in good health, and their life satisfaction ranking was 7.2 out of 10. (The US actually had the highest self-report health ranking, at 90 – conflicting with other evaluations of US healthcare – and a life satisfaction score of 7.0.) There were marginal differences across most of the other categories – enough to create the best overall scores for Australia.

A notable contrast to the OECD Better Life Index is captured in the World Happiness Report (Helliwell, Layard, & Sachs, 2012). A key finding explains the problems in the US:

> The world's economic superpower, the United States, has achieved striking economic and technological progress over the past half century without gains in the self-reported happiness of the citizenry. Instead, uncertainties and anxieties are high, social and economic inequalities have widened considerably, social trust is in decline, and confidence in government is at an all-time low. Perhaps for these reasons, life satisfaction has remained nearly constant during decades of rising Gross National Product (GNP) per capita (p. 3).

The problem is not that economics and satisfaction are unrelated; it is that the relationship is just not simple and causal. As they further explain:

> It is no accident that the happiest countries in the world tend to be high-income countries that also have a high degree of social equality, trust, and quality of governance. In recent years, Denmark has been topping the list. And it's no accident that the U.S. has experienced no rise of life satisfaction for half a century, a period in which inequality has soared, social trust has declined, and the public has lost faith in its government (p. 7).

The World Happiness Report includes data from three other large studies: the Gallup World Poll, the European Social Survey, and the World Values Survey. The major contrast in the World Happiness Report focuses on an alternative measure altogether. The Gross National Happiness (GNH) Index was developed in Bhutan. While it was officially adopted in 2008, its roots go back much further. As described in the report:

> The 1729 legal code, which dates from the unification of Bhutan, declared that "if the Government cannot create happiness (dekid) for its people, there is no purpose for the Government to exist" (Ura 2010). In 1972, the Fourth King declared Gross National Happiness to be more important than Gross National Product (GNP), and from this time onward, the country oriented its national policy and development plans towards Gross National Happiness (or GNH) (p. 111)

The GNH Index covers nine domains: psychological wellbeing, time use, community vitality, cultural diversity, ecological resilience, living standard, health, education, good governance. These are measured through 33 cluster indicators, which include 124 variables in total.

There is also a strong ethic which underlies this index, as was explained by the first elected Prime Minister of Bhutan in 2008:

> We have now clearly distinguished the 'happiness' … in GNH from the fleeting, pleasurable 'feel good' moods so often associated with that term. We know that true abiding happiness cannot exist while others suffer, and comes only from serving others,

> living in harmony with nature, and realizing our innate wisdom and the true and brilliant nature of our own minds (Helliwell, Layard, & Sachs, 2012, p. 112)

The elements with which to work

It is important to remember that we are not discussing the building of a static, physical structure, but working to create a process which will continue to perpetuate itself through time, as it evolves in concert with its environment. This is not some new version of social engineering, through which human behaviors are simply manipulated in accordance with a central authority. It is the question of our ability, as individuals, to consciously shape the worlds that we inhabit.

Allen, Tainter and Hoekstra (1999) make an important point in their research on Supply-Side Sustainability, saying that what makes resources renewable is the whole ecosystem and therefore it is the whole ecosystem that has to be managed and kept healthy. Related to this they remind us that we do not know how to manipulate ecological systems in detail because we have insufficient understanding of how they work. An encouraging fact is that "natural resource systems significantly rebuild themselves" compared to structures we make. (p. 18.)

Envisioning the situation from which we have to begin involves many, many layers of factors. As Bela H. Banathy used to admonish, we should not be constrained in our design by existing limitations of ideas and possibilities. We must exercise the freedom to envision what we truly want, and works towards it. At the same time, there are always realities that we will have to address – things that can change, but that will make a difference in some way.

Envision a three dimensional globe, like an online map. There are now well over seven billion of us on the planet. Paint that as the first layer of the graphic that you envision. That has to be segmented, of course, in many ways: by the places where we live; by age; by income; by education; by size of household; by ethnicity; by ideology. All of those things matter. Next add a layer showing resources, beginning with fresh water, energy, and food sources. Add another layer showing transportation routes – how people and things get from one place to another. Now add economics – the accumulations of wealth and how they move, including where jobs are located. Add military capabilities – trained and armed people, and stockpiles of weapons. Include a layer for information, with everything from where it gets generated and stored to where it gets used. Now add another layer for communications, describing the networks which represent the communities in which we participate, regardless of physical geography. Finally, add climate and natural change – the patterns of rainfall and drought, storms and floods, shifts of tectonic plates, etc. Those trace patterns in the fragile ecosystems in which we live. Now put it into motion, with all of the factors interacting over time.

Some people would refer to this as complex. It is a lot more than we could typically comprehend, much less model, accurately. Even so, many other factors might be added, all of which would make a difference. It all matters, and it is all tightly interwoven and interconnected.

Moving forward

We are left with an array of challenges. The world is made up of dynamic processes which are not simply going to come to a halt while we ponder and plan. There are regular patterns of working, eating, sleeping, and so on, that people will continue while they can. Even in the most war-torn and poverty-stricken places, life finds ways to continue.

At the same time, every day is new. It is never just a copy of the previous day. Some days are filled with familiar patterns but others bring dramatic and unpredicted change.

Our visions for the future vary, as do our influences on it. Most of us feel little real power, but all of us participate in creating what comes about.

Some visions for the future are bright and shiny, based on promises of human ingenuity and technology. They see worlds rescued through science, in which humans continue to overcome the limitations of nature: fuels are grown through biochemical processes; food production continues to get more efficient; human biology becomes fully repairable, and so on.

Other visions see a world of righteousness, dominated by one view of theology or theocracy. The world will not be OK for them until that view prevails (and of course, in those minds, it will – for every different fundamentalist view that exists.)

Others see a continuing world of competition, with themselves at the pinnacle. After all, there will never be enough resources for the entire human race to live at the standards to which the elite aspire. The best and brightest, the most skillful and well-bred, the strongest-willed and most cunning, should prevail.

Other views envision a world of natural tranquility – a Garden of Eden in which humans embrace nature and it embraces them back. For some, that might look like a return to old, indigenous ways, and for others, a new state yet unrealized.

For the majority of people, it's fairly safe to say that they would like the world to look a bit like themselves – compatible with their values, beliefs, needs and wants. Stability and familiarity tend to run high as priorities, even if on relative scales. That is a challenge in a massively connected and diverse world.

So where do we begin? It is fair to assume that technology will be increasingly integrated into our physical and social infrastructures. Siemens, IBM, and Cisco, for instance, all have variations of smart technologies. Siemens is working on smart grids as part of its sustainable infrastructures for cities efforts. IBM's work

in Smarter Planet and Smarter Cities has focused on three characteristics of smart technology; how it is instrumented, becomes intelligent, and is interconnected. Cisco's work includes its collaboration with the National Aeronautics and Space Administration (NASA) in developing Planetary Skin, a system for monitoring climate change and natural resources.

Integrated circuits (i.e. computer chips), RFID (radio frequency identification) chips, bar codes and scanners, video camera systems (connected to surveillance systems, embedded in cell phones, swallowed by patients, etc.), medical and scientific equipment, along with other current and future tools, all function as possible inputs – or sensors – as sources of data. In a white paper for Cisco, Evans (2011) traces the origins of the Internet of Things (or Internet of Objects) as a concept, back to a working group at MIT starting in 1999. (At the time, they focused mostly on RFID sensors.) By 2003, with 6.3 billion people on the planet, there were 500 million devices connected to the Internet. Somewhere between 2008 and 2009, the number of Internet-connected devices exceeded the number of people – well over 6 billion. Estimates are that by 2015 there will be 25 billion connected devices, and that will double again to 50 billion by 2020. (Evans makes a point of distinguishing between the Internet and the World Wide Web. He sees the connections to the underlying structure of the Internet as being the critical tie, not just to the Web as the common interface with which most people are familiar.)

Paralleling this projected growth, China has committed significant efforts and resources to its development of the Internet of Things (IoT). According to Voigt (2012):

> Beijing plans to invest 5 billion yuan ($800 million) in the IoT industry by 2015. The Ministry of Information and Technology estimates China's IoT market will hit 500 billion yuan ($80.3 billion) by 2015, then double to 1 trillion yuan ($166 billion) by 2020 (par. 7).

Wasik (2013) refers to this growing convergence of technology as the programmable world. He describes a progression which sounds much like IBM's three aspects of smart technology:

> The first is simply the act of getting more devices onto the network—more sensors, more processors in everyday objects, more wireless hookups to extract data from the processors that already exist. The second is to make those devices rely on one another, coordinating their actions to carry out simple tasks without any human intervention. The third and final stage, once connected things become ubiquitous, is to understand them as a system to be programmed, a bona fide platform that can run software in much the same manner that a computer or smartphone can. Once we get there, that system will transform the world of everyday objects into a design-able environment, a playground for coders and engineers (par. 8)

The technological possibilities continue to bring us back to the larger questions. Who will direct, or control, or manage these systems – and based on what values?

In 2003, the US White House published a report titled The National Strategy to Secure Cyberspace ("The National Strategy"). It summarized the concerns about the growing connectedness of key industries through the Internet. As it stated:

> Our Nation's critical infrastructures are composed of public and private institutions in the sectors of agriculture, food, water, public health, emergency services, government, defense industrial base, information and telecommunications, energy, transportation, banking and finance, chemicals and hazardous materials, and postal and shipping. Cyberspace is their nervous system—the control system of our country (p. vii).

The report went on to describe strategies whereby the Department of Homeland Security would work to address potential security threats.

In February, 2013, the New York Times reported that a computer security firm had traced large numbers of security attacks on American corporations and government agencies to a particular building near Shanghai, believed to be controlled by the Chinese military (Sanger, Barboza, & Perlroth, 2013). In May, 2013, the same newspaper ran another story, digging deeper into the computer hacking culture in China. As Wong (2013) reported:

> The culture of hacking in China is not confined to top-secret military compounds where hackers carry out orders to pilfer data from foreign governments and corporations. Hacking thrives across official, corporate and criminal worlds. Whether it is used to break into private networks, track online dissent back to its source or steal trade secrets, hacking is openly discussed and even promoted at trade shows, inside university classrooms and on Internet forums (par. 4).

In an interview with a Chinese hacker, Wong (2013) was offered a different view of the problem. Rather than being a state-funded conspiracy, it might just be a new arena for individual opportunism. As explained in the article: "'In China, everyone is struggling to feed themselves, so why should they consider values and those kinds of luxuries?" the former hacker said. "They work for one thing, and that's for money'" (par. 30.)

In the US, by contrast, the National Security Agency is opening the Utah Data Center in 2013, as part of the implementation of its Comprehensive National Cybersecurity Initiative ("The Comprehensive National Cybersecurity Initiative" n.d.). The $1.5 billion, one million square foot facility, will store data measured in zettabytes (i.e. one sextillion, or 10^{21}, bytes.) A partial list of citizen data to be stored there, according to information from the Domestic Surveillance Directorate ("Domestic Surveillance National Data Warehouse," n.d.) includes: internet searches; websites visited; emails sent and received; social media activity (Facebook, Twitter, etc.); blogging activity including posts read, written, and commented on; videos watched and/or uploaded online; photos viewed and/or uploaded online; music downloads; mobile phone GPS-location data; mobile phone apps downloaded; phone call records; text messages sent and received; online purchases and auction transactions; bookstore receipts; credit card / debit card transactions; bank statements; cable television shows watched and recorded; commuter toll records; parking receipts; electronic bus and subway passes / Smartpasses; travel itineraries; border crossings; surveillance cameras; medical information including diagnoses and treatments; prescription drug purchases; guns and ammunition sales; educational records; arrest records; and, driver license information.

The center will make use of the US Department of Energy's Titan Computer, which is capable of processing 20 trillion calculations per second. It is moving, though, towards having the first exaflop computer built by 2018, which could process one quintillion instructions per second. That would allow the NSA to "break the AES encryption key within an actionable time period and allow us to read and process stored encrypted domestic data as well as foreign diplomatic and military communications" ("NSA Utah Data Center - Serving Our Nation's Intelligence Community," n.d., par. 8). (The AES encryption key is the 256-bit, Advanced Encryption Standard, currently used for top-secret US government communications.)

Despite the fact that these programs had been authorized and under development for at least ten years, and that information about them was publicly available, reports from a contract employee revealing information caused domestic and international outcries. Some people interpreted the programs as unprecedented breaches of privacy. Others defended them as necessary for national security. Yet others dismissed them as just newer examples of long-standing practices of spying by nation-states.

In reality, the issues only take us back to earlier questions: ***What kind of world do we want, and what do we value? If security is our highest priority, whom do we trust to create that, and what are we willing to sacrifice in order to achieve it?***

Evolving systems

How, then, will this new, massively integrated world function? In theory, it should become much more efficient, and much better regulated. If we focus on existing processes (e.g. production, services, transportation, trade, etc.) then we could accomplish them using less time, energy and resources, and producing less waste.

What will this new world look like in the long-term, though? It could become much better at putting control into the hands of the few and the powerful. Looking again to the example of the East India Company, "It ruled millions of people from a tiny headquarters, staffed by 159 in 1785 and 241 in 1813" ("The East India Company," 2011, par. 13). And while it was an incredible example of efficiency for its time, "Its dispatches to and from India for the 15 years after 1814 fill 12,414 leather-bound volumes" (par. 17). What if that same level of control could be accomplished simply by typing and executing a few lines of code?

It is also possible that technology could enable democracy in ways that could never be accomplished without it. According to a report from the International Telecommunications Union ("Measuring the Information Society," 2012), approximately one-third of the people in the world use the Internet, but there were over six billion mobile phone subscriptions, equal to 86% of the human population in

2012. If citizen participation and open government initiatives were taken seriously, the means for accomplishing them have never been better.

A total sum of opinions does not necessarily result in good decisions, though. There are issues about which being informed, and even educated, are important.

There are also issues about what drives and influences our decisions, and how they can be swayed. Values, beliefs, and senses of identity run deep. They directly affect how we process information, and often override rationality. At present, being either Sunni or Shiite is a distinction for which people are willing to die, and more important than any sense of nationality. Being Muslim versus Christian is an equally defining distinction. Black versus White, Chinese versus American, Hutu versus Tutsi, conservative versus liberal, gay versus straight, rich versus poor – all are distinctions which may cast people as "others" who cannot be understood or reasoned with.

In the midst of discussions about US counterinsurgency efforts in Iraq and Afghanistan, a question was raised by retired Army intelligence analyst Ralph Peters (2006): "What if they just don't want what we want?" (par. 21). Broadening the question, will we be able to find what we all want, or are even willing to live with?

In systems terms, the questions take us back to Angyal's (1941) distinctions of autonomy and heteronomy. Which systems are most strongly influencing the larger environments, and what factors in those environments are most strongly regulating the whole? In the context of this chapter, will we have a world dominated by powerful individuals, or economic actors such as multinational corporations, or autonomous city-states, or religious leaders and institutions?

Before leaping ahead too quickly, it is worth considering the complicated condition described by Emmerson (2013):

> The leading power of the age is in relative decline, beset by political crisis at home and by steadily eroding economic prowess. Rising powers are jostling for position in the four corners of the world, some seeking a new place for themselves within the current global order, others questioning its very legitimacy. Democracy and despotism are locked in uneasy competition. A world economy is interconnected as never before by flows of money, trade, and people, and by the unprecedented spread of new, distance-destroying technologies. A global society, perhaps even a global moral consciousness, is emerging as a result. Small-town America rails at the excessive power of Wall Street. Asia is rising once again. And, yes, there's trouble in the Middle East (par. 1).

The article from which the excerpt is taken was written in 2013. The excerpt describes situations in 1913, on the eve of World War I. It was an amazing time, and no one expected a catastrophe. As Emmerson (2013) goes on to summarize:

> In the end, technological advances, remarkable in themselves, change things much more than we can ever expect – the speed of adoption of new technologies is hard to predict, and the second- or third-order impacts of adoption even less so -- but also much less. However new the technology, it is ultimately being grafted onto the rather old technology of the individual human, or the community, or the state. And even the newest of technologies can be manipulated for the oldest of ends (par. 11).

If Plato ruled the Internet

Plato's philosopher-king seems never to have materialized in human form – or certainly not in recent times. Most of the governance structures of existing nation-states continue to devolve as he described. What might it be like, though, if Plato's principles governed the values and behaviors of the Internet as it evolves?

Those principles would not demand that everyone was equal, but would allow for each person to do the things to which he or she was best adapted. Its intent would be to move towards creating wisdom and knowledge. It would be governed selflessly for the good of the whole, not dominated by the greed of the few. There would be no rights by heritage. Influence over its direction would come through those most suited at the time to fulfill its purposes.

Homonomy

Homonomy was Andras Angyal's (1941) term for dynamic harmony and balance between systems and their environments. As we consider the world that we might purposefully design, it is important again to remember our context. However sophisticated our Internet of Things, or other future innovations might become, they are still human inventions. They are tools that extend our limited sensory and cognitive abilities. It would be dangerous to assume that they could, or should, replace the self-regulating processes of the biosphere which have developed through millions of years of Earth's evolution. They may help us better understand how things work, but they should not fuel our arrogance about how and what we design. However impressed we get with our knowledge and abilities, we should never lose the wonder in a child's eyes about the beauty and the elegance of life – how it all fits together and keeps going without a single direction from us.

In 1990, Carl Sagan convinced controllers at NASA to have the spacecraft Voyager 1 take photographs back in the direction of Earth from 3.7 billion miles away. His comments about the photograph have been captured in his own speeches, videos, and books, and widely quoted by others. Those remarks are most often referenced in terms of the "pale blue dot," which is all that could be seen of Earth in the photograph. As spoken by Sagan himself, captured in a recording, here are the excerpts:

> Look again at that dot. That's here. That's home. That's us. On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives. The aggregate of our joy and suffering, thousands of confident religions, ideologies, and economic doctrines, every hunter and forager, every hero and coward, every creator and destroyer of civilization, every king and peasant, every young couple in love, every mother and father, hopeful child, inventor and explorer, every teacher of morals, every corrupt politician, every "superstar," every "supreme leader," every saint and sinner in the history of our species lived there--on a mote of dust suspended in a

> sunbeam… The Earth is the only world known so far to harbor life. There is nowhere else, at least in the near future, to which our species could migrate. Visit, yes. Settle, not yet. Like it or not, for the moment the Earth is where we make our stand… To me, it underscores our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot, the only home we've ever known. (*Pale Blue Dot - Carl Sagan [Original]*, 2009).

Whatever we design has to fit; it has to find rhythm and harmony with the rest of the natural order. We aren't likely to have many second chances on a global scale. For the same reasons we should dream large. We won't get many second chances to create the world that we really want.

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