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The technology, mythology and economy of technology

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Keywords

Technology, Technological change, Society

Abstract

Although technology has always been, and will continue to be, the hallmark of human activity, it remains a poorly understood concept. There is little recognition that behind technology lies a technology, the accelerating application of which is making the presence of the technological revolution more and more visible. The most obvious manifestation of this is the increasing frequency in the redefinition of the way in which society lives and works. This article, while demonstrating humankind as technology creatures, provides an explanation of how society progresses or regresses by resolving or failing to resolve the paradoxes inherent in technology through uncovering both its mythology and economy.

Introduction

Technology is being presented as something new as it drives change at an ever-increasing rate. It is often equated with being modern and holds out a panacea in which the future is invariably better than the past. The accelerating rate of change is making the presence of technology evermore noticeable. Technology now pervades every aspect of modern society. However, what is sometimes forgotten is that the relationship between humankind and technology has existed since humans first walked the earth. The term technology itself originates from the Greek word, *techne*, meaning every art, making perfect what seems imperfect in nature. This, in its original context, not only encompassed the knowledge of how to create shelters, the ability to understand the working of the universe but also the power to use numbers to calculate and create language in order to combine letters so that all things can be stored in memory. This capability was nature's gift to humankind for survival. Plato (1956), in the Prometheus, explains that when the gods created mortal creatures they assigned to Prometheus (whose name means forethought) the task of ensuring each creature was equipped to survive. After some pleading, however, Prometheus delegated this task to his brother, Epimetheus (whose name means afterthought). Fortunately for humankind, Epimetheus squandered all the properties at his disposal on the brutes, leaving man unequipped: naked, unshod, unbedded and unarmed. To ensure survival, Prometheus, in his perplexity, stole from the gods, Athena (the goddess of wisdom and military victory) and Hephaestus (the god of smiths and fire), wisdom in the arts together with fire which he handed to man as a gift (Plato, 1956). This, Prometheus did against the express wishes of the gods, who wanted to keep the power of fire – enlightenment – for

their exclusive use. The powers these gods embodied provide a useful insight into the nature of our own technological capabilities and limitations. While Athena derived no pleasure from fighting and preferred settling disputes peacefully using her wisdom, she went valiantly into battle if need be. In a similar vein, while Hephaestus was worshipped for his matchless skills as a craftsman, to punish man, he created a woman called Pandora using clay and water, from whose box sprang all the evils afflicting humankind.

Using Greek mythology, Plato explains how technology is rooted in human nature, that technology is both boon and bane, as well as a paradox where our survival depends on technology but our problems derive from it. The study of technology, however, invariably treats it as something extrinsic to humans. Most observations ignore the fact that we are and have always been technology creatures. Through these stolen "gifts from the gods", arts and fire, humankind has been able to overcome its own natural limitations. Technology has enabled people to fly without wings, and defy nature itself by prolonging their mortal existence. This has not been achieved through the natural process of genetic mutation of biological evolution, but through technology (Drucker, 1970). For this reason, Drucker questions the technologist's definition of technology which is about "how things are done or made" and advocates Wallace's insight which considers technology to be "how man does or makes". The difference between the definition of technologists and that derived from Wallace's principle arises from a process-content dichotomy. Chaharbaghi and Newman (1997) describe content thinking in terms of the mind's ability to consider the outcome and its components without understanding the process that created the outcome. Process thinking, on the other hand, creates explicit models of events and their linkages that lead to an outcome. In developing a meaning for technology, content thinking is outward looking whereas process



thinking directs attention inwards. Within this context, the latter considers that humans drive technology thereby creating a natural relationship through treating it as intrinsic. It is this natural relationship which legitimises technology, allowing us to lose sight of old technology, which was once new, and on reflection laugh at how technologically backward we once were. The outward looking perspective of technology, on the other hand, opens up a Pandora's box where our relationship with technology becomes unnatural, eventually leading to an acrimonious divorce. This is because when technology is allowed to drive us we become creatures of technology. As a result, technology represents a chore, serving no purpose. Like an unwelcome guest, it alienates the host, leaving distasteful memories, thus making the host wary of any new guests. This can be posited as the underlying cause for the failure of countless technological change programmes (Chaharbaghi and Willis, 1999).

In providing a deeper explanation of the natural and unnatural relationships with technology, the significance of purpose cannot be underestimated. As purpose determines the context within which technology is applied, without purpose, technology remains a meaningless concept. In establishing purpose, the main difficulty lies in the limitation inherent in technology. Technology can only solve specific problems or fulfil particular needs. This can potentially lead to different problem definitions by the producers and consumers of technology. When the producers of technology formulate a problem, they can never take into account all the implications of its impact for the consumer. Furthermore, they often overlook the variability of needs of different consumers. As a result, the context is either too narrowly or widely defined. Thus, the technology that the producers create, while natural to them, can be alien to those who are supposed to consume it. This is because technology has grown out of the purpose defined by the producers. However, for consumers such a purpose can only grow out of technology. Any discrepancy manifests itself as a paradox, where technology fulfils particular needs or develops new abilities but, at the same time, creates new needs, burdens and restrictions. Thus, for humans to remain technology creatures, technological change has to represent a natural process for both producers and consumers. This natural process only emerges when the contextualisation of technology accommodates the paradoxes that it invariably creates which in turn requires understanding the technology, mythology and economy of technology.

Technology of technology

Behind technological change lies a technology itself, the identification and analysis of which reveals the birth, exploitation and death of technologies. In fact, the greatest invention of humankind cannot be found in technologies themselves but in the technology of technology. Unlike its outcome, the technology of technology is not a fixed state of being but a natural process of becoming, the cumulative experience of which is accelerating the introduction of new technologies. By identifying and examining this natural process, it is possible to understand technological change and accommodate the paradoxes that technology invariably creates.

As shown in Figure 1, the natural process that underlies technological change can be considered as encompassing four phases: establishing purpose, contextualisation, tool making and exploitation. Purpose is the reason for which everything is done, created or exists. For something to be purposeful, it has to represent an opportunity. The defining characteristic of establishing purpose is therefore that of identifying opportunities through creativity. The result can be described in terms of individuals viewing the world in a different light or from a different perspective, leading to an outcome which is overwhelmingly superior to its opposite past. The exploitation of the opportunity identified calls for a definition of the exact context within which it is to be exploited, together with the concomitant delivery system. The implementation of the delivery system involves the manufacture of the tools necessary for the consistent exploitation of the opportunity. The subsequent outcome is what toolmakers refer to as technology. Finally, the operational phase enters the scene, where the consumers in applying the technology, develop and optimise their technique. The resulting technique describes the relationship the consumer establishes with the technology, which varies from individual to individual depending on the context in which they find themselves and the way in which technology impacts on them. The individualistic nature of this relationship implies that technology cannot be considered as a factor of production but more a tool and what people do with the tool can help or harm their productivity.

Within the natural process that describes the technology of technology, technology assumes different orientations of meaning, including original, directional, operational and relational. Within the original orientation, the meaning of technology is that of the promise of a better future that does not yet exist. Here, technology

represents a bridge, connecting the present to the future. This orientation of meaning derives from identifying opportunities when establishing purpose with technology representing an enabler that must be developed in order to deliver its promise of a better future. From a directional orientation, newly conceived technology provides a new context, enabling things to be done that could not be done before or existing things to be done differently. This orientation relates to the contextualisation phase. The emphasis of the operational orientation is on how a result is brought about through tool making. Finally, the relational orientation refers to how consumers organise themselves with technology in order to fulfil the purpose it was created for. This includes not only learning how to use the technology but also optimising its effectiveness. It also concerns how technology affects consumers in terms of both negative and positive qualities. What unites these different orientations of meaning is the generic term technology through which those who establish purpose, contextualise, make tools and consume technology can find a common ground from which to run the economy of technology.

By ignoring the technology of technology and the different orientations of meaning in this natural process, the confusion inherent in the study of technology is only to be expected. Each study emphasises an isolated dimension and a specific context, which is only meaningful to the observer. For example, Drucker (1970) argues that technologists define technology in too narrow terms. Not only do technologists

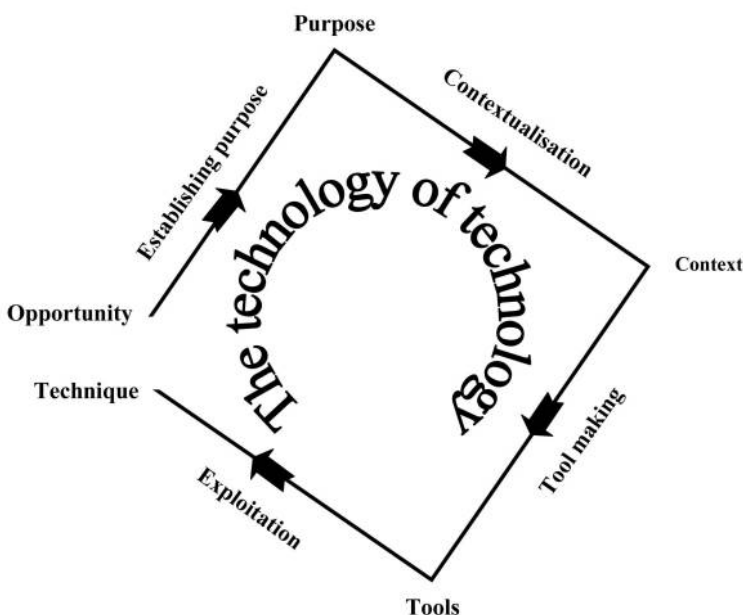
define technology too narrowly in terms of tools, they also define tools too narrowly. In reinforcing this argument, he uses the example that while technologists define the abacus and the geometer's compass as technology, the multiplication table or table of logarithms is not. According to Drucker, technology has a much wider definition than this. Technology is thus

not about things: tools, processes, and products; it is about work: the specifically human activity by means of which man pushes back the limitations of the iron biological law.

By devaluing the crucial contribution of technologists, however, Drucker fails to appreciate the implication this will have for the technology of technology. Without technologists and their orientation of meaning there could be no technology. To technologists, technology has to mean tools and the creation of tools is where their strength lies in the natural process of the technology of technology. This, however, does not mean that the rest should adopt the same orientation of meaning as technologists. For the tools to be of use, they must have first been contextualised, calling for the conception of purpose, without which there is no context for contextualisation. Given these considerations, it could be argued that by not taking in to account all the phases involved in the technology of technology, Drucker's focus itself was too narrow.

The above example illustrates the problem of observers which is while being able to expose the limitations of others, they have a lacuna where the limitation of their own observations are concerned. This can be demonstrated through an examination of the artificial economy of technology. In this economy the producers are the observers of technology while the consumers are either fellow observers, confused consumers of technology or laggard providers of technology (Chaharbaghi and Willis, 1999). Regardless of ideological persuasion, the dominant mindset of observers is that of post-rationalisation where observers, due to their predisposition, choose their data selectively in order to justify their pre-determined conclusions. Chaharbaghi and Newman (1997) consider post-rationalisation as the product of rationalising observations of behaviours and transforming these observations into a formula for achieving a desired outcome. The application of this formula is then assumed to lend itself to a deterministic process. Such a formula, however, is of no avail. The natural economy of technology is unconcerned with post-rational models that claim to explain its behaviour. This is because natural forces drive this economy which means that its

Figure 1
 Technology of technology as a natural process of becoming



behaviour cannot be explained nor duplicated through post-rationalisation. This simple fact was understood in antiquity. According to Heraclitus the past never repeats itself. Thus,

on those that step into the same rivers different and different waters flow...it scatters and...gathers...it comes together and flows away...approaches and departs. All things are in process and nothing stays still...you could not step twice in the same river.

Cratylus took this one stage further, stating that: “you could not step even once into the same river” (Schon, 1967). The natural economy of technology is similar to the river of Heraclitus and Cratylus where not only the actions of the participants in this economy change the river but also the river itself is constantly changing. Given this consideration, observers are merely ensuring that the artificial economy is maintained. This they achieve through assuming that it is possible to explain, in an unnatural way, what those they observe are doing naturally. Through transforming the natural into the unnatural they fuel the ambiguity and vagueness that surrounds technology. This may well represent an unconscious, deliberate act, as without ambiguity and vagueness there is no context for their observations. Despite this, the views they hold are propagated and defended with fervour witnessed in religious zealots. The artificial economy of technology, therefore, gave rise to a new dominant mythology, encompassing both believers and sceptics of technology, each attempting to attract attention and convert as many individuals as possible to their creed.

The dominant mythology of technology

Humanity, as part of its nature, has always had a need to depend on something larger than itself. We consider ourselves as vulnerable beings facing a mighty nature, the behaviour of which is unpredictable. These fears, which represent our primordial instinct for survival, drive the endeavour to transcend or conquer nature. This has led to a constant search for ways to explain the workings of nature. The problem, however, is that both nature and our psyche which is part of nature, cannot be defined, as their enigma is limitless. Thus, since time immemorial, humankind has resorted to myths in order to explain the world within which they live, their place within it and their relationship to it. Within this context, myths represent the collective psyche of a society that encapsulate both its deep-seated fears and hopes. Humankind is therefore not

only technology but also mythology creatures.

While nature has invested in each creature an idiosyncratic combination of senses that satisfy their survival needs, humankind does not live by their senses alone. If this was the case then they would have to accept that they are no different than any other creature in that they are born, consume, procreate and die. The difference is that humankind lives not only with their senses but also with their imagination (Frazer, 1926). As a result, the mind of humankind refuses to give into the phenomena of sense such as sensation of light and colour, of touch, of sound, and scent, which are all that we truly comprehend. By an instinctive, irresistible impulse we are driven to seek for something beyond, something which is assumed to be more real and abiding than our own transitory existence in the sensible world. Such a supposed real world is constructed by our imagination, which transcends the immediate data of sense. It is this creation of thought, the imaginary world, which we consider to be the real world in contradiction to the fleeting data of sense. As a result, there has always been a need for myths to obscure the contradictions that result from the dichotomy between our sensations and our imaginary world – the creation of myths is natural to humankind only. In the same way as the blind do not experience light, other creatures of nature do not experience myths. It is the experience of both myths and sensations that are necessary for the human experience. Without either, a person is less human, less knowledgeable. But is it possible that the blind might know something that others do not?

The word “myth” derives from the Greek *mythos* which originally meant “speech” or “discourse” but which later came to mean “fable” or “legend”. Within its original context, myths were used as tools for explaining everyday natural phenomena as well as human institutions and practices. The former helped society to find ways of living harmoniously with nature while the latter helped in creating a vision of reality that formed the basis of how a society organised itself. To our ancient ancestors, mythology referred to a collection of myths that together formed a mythological system that defined how they lived with nature harmoniously, found their natural place within it and organised themselves to mark their particular existence in history. As myths within the ancient mythological systems multiplied through invoking more primal gods and titanic struggles between opposing forces they created, mythology began to assume a different meaning through a process of rationalisation and simplification, leading to a shift from

polytheism to a monotheistic form that can be found in religions where many gods were deposed in favour of one. This changed the emphasis from society living harmoniously with nature to one that attempts to transcend it. Thus, Freud (1927) states that

religious ideas have arisen from the same needs as have all other achievements of civilisation: from the necessity of defending oneself against the crushing superior force of nature.

Therefore, religious beliefs are illusions, fulfilment of the oldest, strongest and most urgent wishes of mankind... As we already know, the terrifying impression of helplessness in childhood aroused the need for protection though love which was provided by the father... Thus the benevolent rule of a divine Providence allays our fear of the danger of life.

While Freud's analysis of religion focuses on its psychological necessity, Marx and Engels (1984), by emphasising that humankind is a social and economic creature, considered its socio-economic dimension where religion is not only a social construct but also a justification for the existing economic order. They consider religion to be "the opium of the people, the illusory sun, which revolves round man as long as he does not revolve round himself". They maintain that man makes religion, religion does not make man. In other words, religion is the self-consciousness and self-feeling of man, who either has not yet found himself or has already lost himself again. But man is no abstract being, squatting outside the world. Man is the world of man, the state, society. This state, this society produce religion, a perverted world consciousness, because they are a perverted world. Religion is the general theory of that world, its encyclopedic compendium, its logic in a popular form, its spiritualistic point d'honneur, its enthusiasm, its moral sanction, its solemn completion, its universal ground for consolation and justification. It is the fantastic realisation of the human essence because the human essence has no true reality.

Regardless of whether a psychological or socio-economic perspective is taken, religion is based on the natural reliance of humankind on mythology. Such a natural reliance follows a repetitive pattern that is also apparent in the subsequent treatment of the writings of Marx and Engels. In this sense, by using the same mythology that underpins religion, Marxism thus became a religion itself, which it had set out to destroy. Marx and Engels saw the abolition of religion as a necessary pre-condition for the replacement of illusory with real happiness without realising that their own utopia was illusory and that happiness is always in the

mind and the mind that beholds it. In search for real happiness, Marx and Engels therefore created another variant of religion with its own mythological system of beliefs that again was also based on illusory rather than real happiness.

In the same way religion supplanted the ancient mythological belief systems, the belief systems derived from grandiose ideologies, such as Marxism, competed with religion to lessen its importance. As these grandiose ideologies multiplied, however, they started competing with each other with success considered in terms of both cut-throat competition and being different. Exposing each other's weaknesses, however, weakened all, leaving those that had fought at the mercy of a fresh opponent with much greater strength. This simple fact was not understood by modern mythologists, leading to the fall of ideologies. A vacuum was inevitable with both religions and ideologies weakened. As our psyche, like nature, abhors a vacuum, when old myths collapse there will always be a need for new myths to take their place. In the modern epoch none has been more pervasive than the myths that surround technology. But unlike religions and ideologies, which made their myths explicit through holy books and manifestos, the mythology of technology that emerged to dominate is invisible and insidious. This is because while religions and ideologies are by and large ethnocentric, extrinsic and institutional, technology is global, inherent and natural. This distinction is becoming increasingly important with the arrival of the global community and the ongoing breakdown of locality. This community demands a mythology that is globally acceptable with minimal deviation. As a result, the power of technology as a source for a new dominant mythology lies in the fact that it presents itself as blind to race, gender, class, nationality and history and is rooted in human nature. Furthermore, technology itself is never questioned as it can deliver its promised fruits in this life rather than the after life. Moreover, technology only competes with itself through new technology replacing the old.

The dominant mythology of technology has resulted in two extreme groups: the sceptics and the believers. For the sceptics, technology is an unmitigated curse, depriving people of their jobs, privacy and dignity as human beings (Mesthene, 1970). It has made our whole way of life unnatural, outraging essential human values and leaving society prey to the compulsion of modern technology (Muller, 1970). Technology has not only stripped individuals of their human dignity, but, as in Orwell's apocalyptic vision of the future, it has become a ubiquitous means of discipline and

control (Burnes *et al.*, 1988). It has given rise to a new false god at whose altar society pays homage. This new religion is built on the technological fix, which is presented, and largely believed, as being capable of solving many of the ills afflicting society (Oskamp and Spacapan, 1990). However, instead of creating a utopia, the sceptics contend that the technologically driven second industrial revolution is creating a form of hell on earth. The impact of new technology is seen as already rivalling the negative outcomes of the first industrial revolution (Noble, 1995), that led Blake to write about the “dark satanic mills”. Thus, new technology is presented as a fundamental evil, which is undermining the stability of every society, even as it poisons the environment and degrades our quality of life (Sale, 1996).

In contrast to the sceptics, the believers in technology view human’s technological capability as the separator between man and beast. Technology has allowed humankind to overcome their own natural (animal) limitation. At a less grandiose level, technology is seen as having fundamentally changed the way society lives and is the essential ingredient in economic growth (Schon, 1967). Believers in technology present it as the motor of all progress, while holding the solution to many of the present and future problems society faces or creates (Mesthene, 1970). It has liberated society from the drudgery of everyday life (Stein, 1998) and could form the basis of a technological utopia, where everyone would be wealthy, healthy and have abundant leisure time to benefit from the joys of technology (Douglas, 1971). Thus, technology is perceived as being the magic ingredient that can make anything happen.

The dominant mythology of technology, regardless of whether pro or anti, is fundamentally flawed in that it externalises what in reality is internal to us. Thus, as religions can place all the good qualities humans possess on an external deity, the dominant mythology of technology has externalised our technological nature, and in the process, making what is natural to us unnatural. The problem this creates is that, not only we invent technologies, we give technology sovereignty over us. Owing to this technology has become an unnatural external force thereby giving rise to a series of seemingly irresolvable paradoxes. Champion (1998) provides a number of examples, which include the paradoxes of:

- control/chaos where technologies bring order to the lives of consumers but at the same time create forces that disrupt their everyday routines;
- freedom/enslavement where technology offers consumers greater freedom as well as new restrictions;

- new/obsolete where consumers may have leading edge technology today but always have a fear of falling behind the next day. Put simply, technology is like tomorrow which is inescapable but never arrives;
- intelligence/stupidity where, through the introduction of new technology, the consumers feel smarter by being able to do things they could not previously do while at the same time losing previously developed abilities;
- efficiency/inefficiency where the ability to perform tasks faster, creates time consuming new burdens.
- fulfilling/creating needs where new needs are created through the fulfilment of old needs;
- assimilation/isolation where technology brings people close together but at the same time drives them further apart; and
- engagement/disengagement where technology makes activity participation easier but devalues the experience.

In accommodating these paradoxes one possible course is to become a Luddite. However, to be a Luddite is to be anti-technology. This stance is not a tenable option for two reasons. First, to be anti-technology is to be anti-human because we are technology creatures. We will always have a relationship with technology because it is and will remain an integral part of our nature. Second, to be anti-technology is akin to be anti-food. As we need food to live, so we need technology to survive. However, it would be unhealthy to have too much or have food that has no nutritional value. Similarly, there is no point in having a technology that does not serve a purpose, creates negative side effects and takes away our ability to control our lives where we are no longer technology creatures but become creatures of technology. This can be illustrated by using the clock as an analogy. When the clock tells us it is noon and therefore time for lunch, this does not necessarily mean that we are hungry and should eat. Like a clock can dictate our biology, the indiscriminate consumption of new technology can similarly dictate our lives. By taking the new technology for granted without considering its positive and negative qualities, we perpetuate the paradoxes that we subsequently experience. It therefore follows that perhaps the greatest paradox of all surrounds the reason why people find refuge in the dominant mythology of technology. The new opiate of the masses is such a strong drug that it has made them feel so powerless that there appears to be no other option but to accept it without question, leading in many cases to its subsequent rejection. If the answer does not lie in the dominant mythology of technology, the only other

alternative lies in nature itself, which requires rediscovering the natural economy of technology. The realisation of this economy demands a mythology that is rooted in human nature.

The natural economy of technology

Participation in either the natural or artificial economy of technology is determined by the relationship that is developed with technology. Understanding the way in which such a relationship develops calls for distinguishing between three key human dimensions:

- 1 Human nature which is fixed and universal, making us, for example, technology and mythology creatures.
- 2 Human component which is rich in talents and practices built on human nature and which is unevenly spread. It is this diversity that finds unity and an expression in the human nature that is fixed and universal.
- 3 Human condition that encompasses the social/institutional framework within which we are situated. Its extreme malleability makes it fluid and indeterminate. It is the human condition which is reflected in the plasticity of human identity and the apparent absence of fixity means that we have the capacity to remain technologically fluid, be this institutionally based or manifesting itself in the practices of individuals or groups.

While the human condition is the context in which human nature finds itself, it is the human component that determines the nature of technological change and whether such a change is based on the artificial or natural economy of technology. This is because the diversity that the human component presents will encompass not only the believers and sceptics of technology but also the populations that they influence. Thus, and paradoxically, while the artificial economy of technology rests on the mythology of believers and sceptics, the natural economy of technology is also dependent on their participation. However, whereas the artificial economy emphasises the differences between the believers and sceptics, the natural economy exploits their strengths. This can be demonstrated by distinguishing between the critical acceptors and uncritical acceptors and resisters of technology. As Figure 2 illustrates, the critical population, referred to as technology creatures, develop a natural relationship with technology by assuming the role of master through their criticality. In contrast, by becoming slaves, the relationship between the uncritical populations and technology is unnatural. While the uncritical acceptors are

slaves to the latest technological fix, the uncritical resisters remain chained to the outdated potential of the old technology. For this reason they are referred to as the creatures of technology. Technology creatures, the critical acceptors, participate in the natural economy through their ability to balance the opposing forces that the sceptics and believers create. This balance is achieved not only through locating the strengths of the sceptics and believers in the technological change process, but also through ensuring the subordination of mechanical time to natural timing. These two determinants are closely interrelated but they should not be treated as indistinguishable. By conflating them, the importance of both is lost.

Natural timing of human responses to new technology is not governed by any quantitative laws or mechanistic formula. The evidence for this lies in the fact that consumers often turn down a new technology even though it represents numerous opportunities. This does not mean that consumers are irrational in their behaviour but rather they differ from the producer of the new technology in what they consider to be most important. Natural timing is that of the mind. No matter what opportunities are brought forth, if the consumers are not ready in their mind, they will not take on board that technology. Natural timing is, therefore, a unifying field that brings together all the phases of the technology of technology (see Figure 1). This natural timing should not be confused with mechanical time – the sight of natural timing is lost when mechanical time is emphasised. We are the only species who wear watches and use calendars, which govern our routines. In contrast, the defining characteristic of natural timing is readiness. The principle of stable stability (Chaharbaghi and Willis, 1998) is a powerful way of explaining this natural phenomenon within the context of technological change.

According to the principle of stable instability society progresses and evolves through a social movement that takes place because it has to happen in order to fulfil the desire to improve the quality of life and standard of living. This is achieved by bridging the chasm between the familiar and unfamiliar, old and new, and past and future. This principle acknowledges that as a society we are naturally inclined to demand the fulfilment of our growing expectations. However, the ever-increasing social expectations can only be met through change, which we are also naturally inclined to resist. These social inclinations manifest themselves in two diametrically opposing forces. The first points towards change and instability while the second favours the *status quo* and stability. While the former

depends on the nature of individuals the latter relates to the collective psyche of society. As without consumption there is no context for production: how appropriate or inappropriate a new technology is hinges on shifting the balance between these forces. Most want, need and welcome order and stability and find comfort in the past particularly in times of change. As a result, the majority has long been conditioned to resist change. The longer the period of stability this resistance brings about the harder it becomes to accept change. As change involves a process of deconstructing the accepted logic, without the legitimisation of a new technology there is no context for its introduction. Many believe that technological change is all about the creation of new technology and, therefore, ignore the crucial legitimisation phase that has to follow leading to its critical acceptance. This can only take place when the majority realise that the introduction of a new technology is overwhelming preferable to the opposite past through for example the dimensions of social inclusion, accessibility, affordability, freedom and convenience. The speed with which technological change takes place is determined by the:

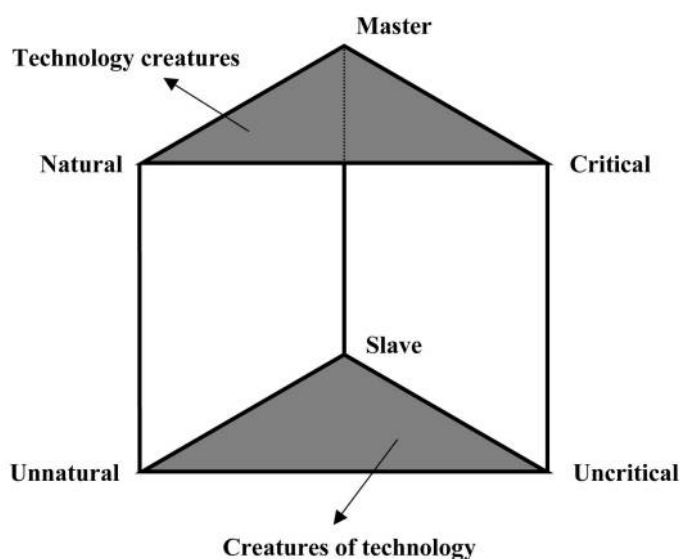
- restraint society imposes on itself by looking to the past and changing as little as possible;
- process of technology of technology that looks into the future and changes expectation patterns as much as society allows; and
- acceptance level which governs the degree to which the shift from the old to new expectations permeates society.

The natural economy of technology is, therefore, governed by the principle of stable instability which takes place because it has to happen in order to fulfil the need or desire of individuals to achieve a result that is somehow new and meaningful. Such a result reflects problems or opportunities, which are the reason why individuals see the world in a different light or from a different perspective and change their way of doing things in order to realise it. The participants in the natural economy of technology therefore, know what they want to keep and its cost, when they have had enough, when they want something else and are willing to pay the price.

Conclusions, implications and opportunities

This paper has demonstrated that in order to make sense of the confused battleground on which technology is discussed, it is necessary to understand human nature within which technology is rooted. This requires looking inward rather than outward. Technology, however, is generally viewed as something extrinsic, ignoring the fact that we have always been technology creatures – technology is intrinsic to us. When technology is viewed as intrinsic, humans drive technology. This is the reason why the most appropriate technologies are those which develop a natural relationship with us. The problem is that those who study technology develop a myopic view of what it means and attempt to unite everyone around their meaning in order to ensure uniformity. True unity, however, can only be found in diversity, which is brought forth through the dynamic balance of forces that differences generate. This dynamic balance mirrors the workings of nature. To remain natural the aim should therefore be to live in harmony with nature by striving for the same dynamic balance. Our failure to understand the importance of this aim has led to attempts to either transcend or subdue nature. The former can be found in mythologies on which religions rest while the latter is associated with the dominant mythology of technology. As the attempt to subdue nature has superseded that of transcending it, understanding the mythology of technology is important for at least three reasons. First, it is a vital ingredient in uncovering the way in which humankind's experiments in living will be shaped as technology plays a more significant role in the way in which we live and work. Second, as with all mythologies, the mythology of technology alters dramatically the world-views of society. Finally, the mythology of technology, that permeates society today, cannot be neglected

Figure 2
 The dichotomy of critical and uncritical populations



when individuals form their own emotionally satisfying picture of reality.

The problem humans have created today through their mythology of technology is that they have lost sight of their relationship with nature. In contrast to previous stable periods of the great co-ordinating mythologies, which are now perceived as lies, we now live in a schizophrenic world where our psyche has split into two. This destabilises mythology as the divorce between the imaginary and sensible worlds grow ever larger. An increasing number of contradictions therefore result which society cannot cope with as the mythologies that form the basis of how it organises itself have become misguided, unreliable, biased and harmful in that they represent an attempt to conquer nature, which can only mean society conquering itself. Such an attempt implies that society never finds peace with itself, technology nor nature. The only way this situation can be reversed is through society adopting a higher level mythology, which will act as a surrogate parent that establishes a new order through overcoming the glaring weaknesses inherent in its adopted children by balancing the domineering forces these competing lower level mythologies create. Some readers may presume that such a higher level mythology derives from the explanation of technology provided by this study. Such a presumption, however, ignores that this study is not primarily about technology. It has merely used technology to reinforce the importance of human nature and how technology is rooted within it. This finding is nothing new in that it has simply rediscovered what has been lost. The value of this paper therefore lies in recalling what we have forgotten.

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Application questions

- 1 When is a society technologically advanced?
- 2 Is technology advanced and consumed fast enough?
- 3 When does the cost of preserving an existing technology outweigh the price for its emerging competitor?
- 4 Are these questions best left alone?