

The Politics of Knowledge Management

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The Politics of Knowledge Management

I. Introduction

Early in the twenty-first century, everyone recognizes that the global economy is increasingly knowledge-driven. If there is a cliché that most aptly characterizes the competitive features of the world economy today, then it is the global race for knowledge. Winston Churchill is reputed to have said, “The empires of the future are the empires of the mind.”

The purpose of this paper is to highlight some factors central to knowledge management, taking into account the role of politics and conflict in the provision and deployment of knowledge. These factors pertain to specific attributes of ‘knowledge’, the role of networking, the value of knowledge and networking, and the impacts of cyberspace. While scholars and observers alike can differ on the actual role of knowledge, everyone agrees that we have already embarked on a transformation of such pervasive importance that it may be compared to the agricultural revolution (which occurred independently in different parts of the world around 8000 BC) or of the industrial revolution (which occurred in 18th Century Europe).

We proceed from for the assumption that conflicts over the core values in society are often manifested in terms of political contentions over the ‘best’ knowledge and that which is most legitimate’ determining *who gets what when and how*. The struggle can often be intense. Clashes of values carry specific meaning for the contenders. Differences in meaning generally situate and define often conflicting positions in the ‘playing field’.

With advances in information technology, the growing density of cyberspace and enhanced efficiencies in information management, the management of knowledge is rapidly assuming the status of core competence for institutions and enterprises, key to the performance of governance at all levels, and central to the efficacy of individuals. The forging of cyberspace continues to enable new possibilities for knowledge generation, provision and sharing, and greatly expands the potentials for knowledge diffusion, distribution and deployment.

All of this creates new modes of knowledge management and, inevitably, new possibilities for contention. Especially important, however, is the emergence of CyberPolitics, a newly coined term which refers to extending the arena of politics beyond the conventional domain of 'real' social interaction into new and uncharted arenas of 'virtual' interaction.

We must begin by noting key attributes of 'knowledge', as a reminder of the challenges and complexities at hand. All forms of knowledge have value. The knowledge 'industry' itself is important, as are all knowledge producing institutions, agents, individuals and the supporting social mechanisms. Nonetheless, we must acknowledge that knowledge is power, a timeless truth coined by Francis Bacon. By the same token, shaping the content of knowledge is itself, a source of power. When power is evoked, politics is a necessary corollary.

II. The Knowledge Factor

According to Webster's dictionary, to "know" is to "hold something in one's mind as true or as being what it purports to be"...[this] "implies a sound logical or factual basis"[and it also means] "to be convinced of...." By extension, *knowledge* refers to the "fact or condition of knowing something with familiarity gained through experience or association; acquaintance with our understanding of a science, art, technique, condition, context, etc" [including]... the range of one's information and understanding to the best of abilities in place [as well as]...."the fact or condition of being aware of something..."... "... therefore, what is "known" is that which is "generally recognized..."

Most often than not, knowledge comes with variable degrees of uncertainty. This coupling is fundamental to determining what we know and what we do not know – and the implications for decision and choice. Invariably, it is wise to recognize the uncertainty and resort to the well known notion that 'caution is the better part of valor'.

Knowledge & Power

The connection between knowledge and political factors, such as power, influence, capability, war, and peace, is generally acknowledged but seldom addressed head on. 'Knowledge' has served largely as implicit 'variable' in the social interactions or in relations among nations and

accorded little if any specific strategic importance. At the same time, however, everyone appreciates the obvious, namely that: *if* knowledge is power, *then* the application of knowledge is necessary for the realization of this power.

The power of knowledge is, fundamentally, the power of leverage and influence derived from the provision, access, diffusion and expansion of knowledge – as well as its utilization. This composite leverage is contingent on the interaction between the *content* of knowledge and the *value* of knowledge — and both are significantly enhanced by knowledge-networking practices made possible through innovative uses of cyber venues.

During periods of social transformation, the deployment of knowledge is usually associated with efforts to define the new value for society and to expand their legitimacy. And if the value issues and related objectives are not fully articulated and if prevailing social interactions are fraught with uncertainty, then past experience is not the best basis for managing present predicaments. In such cases, knowledge becomes both instrumental (i.e. leading to change) and contextual (constrained by conditions). Parenthetically, the formulation of evidence-based policy is precisely that: namely the use of knowledge for the pursuit of policy, and the resort to knowledge as a legitimization mechanism.

The issue of *content* is rather complex. We propose here an important distinction, the distinction between (a) *knowledge-as content* and (b) the *content-of-knowledge*. Each contributes to the value of knowledge, but in different ways and for different purposes.

Knowledge-as-Content

The literature on knowledge – broadly defined – tends to use a set of terms interchangeably, such as human capital, intellectual capital, manpower, human resources, manpower resources, and combinations thereof. Some distinctive factors are obscured in this process, and their ramifications are lost. Among the important factors are (a) the nature of knowledge as an *intangible*; (b) the *codification* of content capturing the meaning of knowledge; and (c) the *utilization* of knowledge by individuals and/or institutions.

Among the most fundamental attributes of knowledge as an intangible, is that its acquisition and utilization follows a law of *increasing returns*. This means, literally, that the more knowledge is obtained and used, the greater is likely to be the return on its deployment and

the value associated with its 'utility' to the individual (or group) user. As a result, a critical feature knowledge as an asset is its input into the nature of economic and social relations.

By now everyone recognizes the contributions of advances in information technology to the entire process of knowledge creation, production, distribution and diffusion. Digitalization accelerates every aspect of the knowledge enterprise. Similarities are being drawn between the properties of 'knowledge' and those of 'environment' – not only in terms of their 'elusive' nature, but equally important in terms of the challenges in capturing their essence for a wide range of purposes – as an instrument of leverage and power, as an asset and a resource, and as an instrument of policy, for example.

Content-of-Knowledge

It goes without saying that the *content* of knowledge is highly variable in nature, character, scale and scope. From the perspective of economists, knowledge is a privately produced public good.

This means that knowledge supplied to one person is available to others at no added cost (i.e. non-rival consumption), and the producer of knowledge cannot prevent anyone else from consuming it (i.e. non-excludability). This attribute is a property of knowledge; it does not mean that knowledge is produced or owned by the public sector.

In a strict sense, while it is privately produced – by individuals -- the supporting and enabling conditions are more and more connected to, and contingent upon, available organizational and social mechanisms, as well as the communication and infrastructure systems in place. We can never under-estimate the critical role of investments in human capital – or in any aspect of knowledge development, provision, and diffusion

Concurrently, of course, the compelling evidence of the increasing knowledge-intensity of economic activity in industrial countries reinforces what has become close to a new orthodoxy, namely that knowledge matters and so does technology. Precisely how and in what way remains unclear.

In this connection, the concept of the "knowledge economy" has gained considerable circulation. As Dominique Foray notes in *The Economics of Knowledge* (2004), a knowledge

economy in one in which “... the proportion of knowledge-intensive jobs is high, the economic weight of information sectors is a determining factor, and the share of intangible capital is greater than that of tangible capital in the overall stock of real capital.” (Foray, 2004: ix). By definition it is also one in which there is enhanced access to knowledge in all of its form and to knowledge bases.

In practice, however, there is a symbiotic relationship between knowledge and politics. Political actors at all levels, and in all contexts, recognize the importance of the political message and its content. Enhancing the value of content by assigning it the authority ‘knowledge’ is itself a process of *legitimization*.

Further along we shall note some issues central to sustainable development as a domain of knowledge. By definition, these issues are also those relevant to knowledge for managing social transformation. With the emergence of sustainability sciences, a new area of human knowledge is now formally acknowledged. While its scale and scope are still very broad, the focus on nature-society interactions constitutes its core, as indicated in the *State of the Planet, 2006-2007* (a publication of the *Science* magazine).

III. The Value of Knowledge

Clearly all of these issues discussion are related to notions of value and, more specifically, the value of knowledge. We turn first to the matter of value, and then to the knowledge connection.

Concept of Value

Conventionally, *value* is defined as ‘fair return or equivalent in goods, services, or money for something exchanged’ (*Webster’s Collegiate*). It also means worth of some kind, as well as being of some importance. But the terms and conditions of that ‘value’ and its units or measure are not implied in the core concept.

The value of knowledge (and the specifics of its content) has different meanings in private and in public settings. For example, in many private contexts it is connected to economic gain and market prices and conditions; in public settings it is viewed in terms of facilitating the provision

of services for meeting social needs and implementing policies to improve social and public well being. The value for knowledge is seldom as explicit or 'extractable' from a knowledge exchange as is the value of a physical product.

Central to this issue is that knowledge *per se* is extremely difficult to metricize or measure.

So, too the value of the same 'piece' of knowledge may have different value for different individuals, firms, agencies or nations. Despite the usual distinction between knowledge 'for its own sake' versus for all other potential purposes, knowledge as a 'commodity' usually retains some intrinsic value irrespective of context. If that is the case, then one could ask "value to whom? how? when? why? — as well as how much, and of what kind?"

The Knowledge Chain

We put forth here the concept of a knowledge chain in the nature of a proposition. The proposition is that the knowledge chain consists of the value-added to the *content* of knowledge created by the institutional and managerial activities and functions that protect and enhance knowledge-items and thus increase its overall 'worth'.

Given that knowledge can no longer be viewed simply as a 'residual' – companion to the proverbial 'technology factor' in the production function in economics – it is now recognized as *central* to economic performance and that in some sectors it is a driving force. The global race for knowledge, noted earlier, leads us to understand that learning *how* to garner the power of knowledge requires us to learn *about* knowledge and about how to *generate* knowledge of *relevance*.

By extension, the potential for *strategic uses* of knowledge has, in turn, shaped new modes of knowledge management, giving rise to what is now known as 'knowledge-networking' – a verb, a noun, an adjective, and a new mechanism for generated added value. When the transmission of knowledge is undertaken via e-venues, e-networking becomes not only the *conduit* at hand, but also the mechanism through which this particular conduit itself enhances

the value of knowledge to the actors. Conversely, if the conduit is interrupted or if it is inefficient, ineffective or irrelevant, then the value-enhancing effects are damaged accordingly.

The generic value proposition is this: *the greater is the quality of the knowledge content, the higher is the value of knowledge* – all other things being equal. Simple as this logic appears, nonetheless, it points to an important issue, namely that the *value* of knowledge is not neutral with respect to the nature of the *content*. Thus, the drivers of value are shaped by the *quality* and the *volume* of content.

To some extent, the analogy with the supply chain in the material world is especially instructive. In the context of production, manufacturing and/or delivery of goods or physical-services, efficiencies in the supply chain are important in reducing costs and enabling more rapid transformation of 'raw' materials into 'manufactured' products.

With increasing knowledge intensity of economic activity, an analogous logic holds with respect to the knowledge chain. The concept of knowledge *value chain* signals that more 'worth' is added at each segment of the process (or transaction).

Clearly, the knowledge chain is not as well understood or as central to the idiom of economic performance as is the supply chain. In some contexts, even the nature of the supply chain itself has changed given the increasing role of knowledge and the value of its content. Of relevance here is that the knowledge chain, itself a function of *content*, is enhanced by effective *conduit*. Depending on the issue-area, the value-difference between conduit and content can even blur.

IV. Knowledge Systems for Social Transformation

While different visions of alternative futures may rest on different theoretical and philosophical foundations, the reliance on knowledge in any form requires some systematic attention to the *content-of-knowledge* as well as *knowledge-as-content*. Both are contingent on the conception, design, construction and implementation of a robust *knowledge system* to help represent a particular domain of interest.

Knowledge System

The knowledge system is basically the 'architecture' for the framework within which to 'locate' the knowledge-items. In well developed areas of knowledge, usually the ontology serves that function. In domains where the foundations of knowledge are evolving and where part of the challenge is to develop the very fundamentals as well as the derivatives, then the first task to address head on the need for a knowledge system. In practice, the framework provides the basic guidelines for organizing and managing knowledge.

More specifically, we define a knowledge system as: *An organized structure and formal process for generating and representing content, components, classes, or types of knowledge.* Defined by its architecture, the knowledge system is (a) generic in form, but (b) specific in its domain content, (c) reinforced by a set of logical relationships that connect knowledge-items (d) enhanced by a set of iterative processes that enable evolution, revision, adaptation, and change (e) subject to pre-defined criteria of relevance, reliability, and quality.

There is a greater consensus about what does *not* constitute sustainability than there is about the basic concept itself. Sustainability is *not* unfettered growth, it is *not* maximization of output, it is *not* materialization, massification, spatialization, disaggregation, or centralization – to note only the most obvious features signaled in another context by John Seely Brown and Paul Druid in *The Social Life of Information*, 2000. And yet the issue itself is intensely political in the most conventional sense. By the same token there is more consensus about the basic meaning of change – in theory and in practice --- than there is about the specifics of social transformation.

An international effort to generate a knowledge system for sustainable development has been completed under the auspices of the *Alliance for Global Sustainability* (AGS) which consist of four major international research universities, namely, MIT (USA), Tokyo University (Japan), ETH (Zurich) and Chalmers University (Sweden). The AGS is devoted to the development and deployment of knowledge for facilitating transitions toward sustainability.

The results of these initiative and related knowledge deployment efforts are reported in *Mapping Sustainability: Knowledge e-Networking and the Value Chain*, edited by an international team of collaborators and published by Springer, Germany (2007). Among the

objectives of *Mapping Sustainability* is to formulate ontology of sustainability, one that would provide a base-line for evolving understandings of this general domain. .

The international community is already committed to the pursuit of trajectories toward sustainable development. It also recognizes the importance of managing social transformation. Thus, everyone generally expects that more 'knowledge' and improved 'quality' will contribute to better policy and greater wisdom. For this reason, the creation of a base-line for sustainable development as an evolving knowledge domain is an important initiative.

Value of a Knowledge System

Based on our experience with *Mapping Sustainability*, we now highlight (with some confidence) the value of a knowledge system and the specific benefits that render added value. We focus on four factors.

The first and most important source of value is that a knowledge system provides a consistent venue for organizing knowledge and a *coherent framework* for addressing the challenges posed by the proverbial 'devil' of complexity and the associated 'details'. Once the knowledge framework is completed, it can then be 'populated' with knowledge items. These items may originate, or reside, in physical or virtual contexts (or both), but will be more readily accessible.

The second source of added value is perhaps more practical in nature. It relates specifically to *gains-from-organization*. For example, the power of search engines, notably Google, is well appreciated and used by almost everyone participating in cyber arenas. Google provides retrieval services on a large scale. And it does so very well. At the same time, it does not provide *content organization* nor does it seek to do so. A knowledge system (and its ontology) serves this important function.

The third source of value pertains to the *utilization* of the knowledge system. In the case of *Mapping Sustainability* the knowledge system itself is the core feature of global knowledge networking activities. This allows people in different parts of the world to converge around common understandings of the issues at hand and collaborate for purposes of sharing knowledge, developing new knowledge, or even applying knowledge to their own needs.

The fourth type of benefits created by the development of a knowledge system pertains to the uses of existing knowledge – in terms of theory and evidence – to help facilitate and even guide the *re-use of knowledge* as relevant. The general tendency to focus on the uses of knowledge underestimates the power inherent in its re-uses.

We must stress that knowledge re-use is very important. Given that greater attention is given to the generation and provision of knowledge than to its uses and re-uses, a valuable asset remains under-utilized, generating opportunity costs of unpredictable scale and scope.

V. Knowledge Networking & Value of Networks

Webster's defines *network* as an interconnected or interrelated chain, group or system. More rigorous is the definition provided by network theory (also known as graph theory) which has influenced many scholarly disciplines even when the intellectual debt is not always explicit.

The transformational impact of networks is generally acknowledged as one of the most important features thereof. In all countries, in all parts of the world, networks influence and even shape production, experience, power, and culture.

Value of Networks

The concept of 'network' has achieved common currency in a wide range of disciplines with attendant variations often subtle and implicit in the meaning attached, as well as in its uses, theoretical and empirical. The added value in every 'incident' of networking lies in its contributions to the knowledge of the actors and to the enhancement of its value to them.

The intangible, in this case, is the knowledge transmitted through the network, and the added value is contingent not only on the content itself but on the efficacy of the network. Therein lies the source of advantage, namely the network allows for multi-directional provision and transmission of knowledge. In those terms, a network is substantially 'more' than a portal. The latter is basically unidirectional in its transmission capacity and intent. Unlike networks, portals are inert in that they are usually not designed to support multi-directional interaction functionalities.

In social contexts, it is common to consider networks to be defined by *purposeful interactions*, whereby the goals of the actors are central to the definition of the network. Purposive behavior is a fundamental feature of politics.

Knowledge e-Networking

Based on our experience, reported in *Mapping Sustainability*, and on the attendant global knowledge networking system we an *effective* knowledge e-networking initiative to consist of:

A computer-assisted organized system of discrete actors (a) characterized by knowledge-producing capacity (b) combined through the use of common organizing principles, whereby (c) actors retain their individual autonomy, so that (d) networking enhances the value of knowledge to the actors, and (e) it contributes to the expansion of knowledge.

Jointly these seemingly incompatible properties of networking generate patterns of interaction, which then create multiplier effects throughout the entire system.

We now turn to the multiplier effects, which extend the reach and impacts of a networking system. Accordingly, we believe that 'e-networking' is an e operational mechanism for enhancing the value of knowledge through the diffusion of its content and through the feedback obtained by this diffusion. Therefore, 'e-Networking' serves as the fundamental enabler of knowledge-based communication in a globalizing world. In so doing, it also contributes to new knowledge.

In this context, the term 'new knowledge' refers to the emergent demand for, and development of, knowledge about matters that were not previously salient. This brings us once again to 'knowledge' as a facet of power, as an input in economic activity, as a source of value added and, most important of all, as a domain of understanding.

Given that the diffusion of knowledge e-networking functionality makes it possible to engage in multiparty, asynchronous, and multidirectional interaction, it thus facilitates the flow of knowledge generated *bottom-up*. This means that the knowledge originates at the grass roots, for example, and flows toward domains at the leadership levels (at the top, so to speak).

Such a trajectory greatly enhances inputs into decision and choice both within and across societies. Moreover, access to *interactive* knowledge networking functionalities empowers stakeholder communities to express their preferences and make explicit their inputs into decision-making. At the same time such practices give decision-makers access to multiple stakeholder communities.

Despite the large literature on various facets of knowledge management and the diversity of tools and techniques, the fact remains that both design and implementation are shaped by the goals and the purposes of the knowledge initiative itself. Early in the 21st century, we also recognize the importance of cyber access for the management of knowledge. Almost by definition, we find it necessary to address the influence of the CyberPolitics surrounding this issue.

VI. CyberPolitics – New Knowledge Imperatives

Politics everywhere involves conflict, negotiation, and bargaining over the mechanisms, institutional or otherwise, that enable the *authoritative allocation*, seeking to resolve the contentions over particular sets of core *value* and its definition. Indeed, the very knowledge that is required to make a political determination regarding *who gets what, when, how* becomes intensely politicized as is the process of brining knowledge-to-action – in the market or in political arena. This classic formulation of politics is due to Harold Laswell, in *Politics: Who Gets What When How*, 1952. It provided the foundations for the field of Political Science within the Social Sciences.

Other scholars have expanded this view and introduced two important aspects, namely the role or compliance, on the one hand, and the functions of enforcement, on the other. The core, however, remains that put forth by Harold Lasswell.

Politics, as the process through which authoritative allocation of values in society are forged and implemented, becomes especially complex when we factor the ubiquity of the pursuit of wealth and the pursuit of power. This is particularly important as we consider the role of knowledge in society and the ways in which its deployment shapes the very fundamentals of *who says or does what, to whom, when, why and how*.

Politics of Knowledge

Some of the most serious political contentions in any society surround the very concept of growth and the extent to which it can or should be constrained in some way to take account of past lessons. It is difficult for anyone to argue for limiting growth in developing countries. By the same token, no one wishes to argue for limiting the growth of the private sector and constraining financial or other gains. Concurrently, everyone recognizes that past patterns cannot persist, and that the costs of unrestricted economic growth are too extensive to be borne with impunity.

The dilemma is this: While there is a codified body of knowledge surrounding the definition and dynamics of economic growth, there is no equivalent for any formally accepted and recognized view of transformation and change other than growth (or decline). The notion of ‘sustainable development’ emerged as a counter to the dominant trend, but its knowledge base is yet to be developed and its fundamentals to be codified.

At the same time, however, the knowledge economy (noted earlier) may not necessarily be a sustainable economy or one that facilitates the management of social transformation. This situation provided the basis for introducing the notion of “sustainable growth” into the evolving political discourse surrounding sustainability, but this notion also remains ambiguous – if not contradictory in its very logic.

CyberPolitics

First introduced in a thematic focused issue of the *International Political Science Review*, 2000, the concept of *CyberPolitics* refers to the conjunction of two processes or realities – those pertaining to human interactions surrounding the determination of *who gets what, when, how*, on the one hand, and those enabled by the uses of virtual spaces as new arenas of contention with modalities and realities of their own, on the other. In many ways the single most influential study providing important foundations for what we now consider as *CyberPolitics* may well be *The Nerves of Government: Models of Political Communication and Control* 1963, by Karl W. Deutsch who focused on communication, feedback, equilibrium and related concepts in his efforts to articulate the body politic “with its nerves – its challenge of communication and decision”

Despite differences in perspectives worldwide, there is a general scholarly understanding about the meaning of “politics”, the second part of the newly coined term. It is the uncertainties and ambiguities surrounding the first part of the term, “cyber”, and the nature of human interactions in virtual spaces that distinguish the joint term of this newly constructed semantic.

The CyberPolitics of knowledge management must be viewed in two contexts which jointly represent complex feedback systems. The first context pertains to the societal uses of cyber venues for purposes of influencing the norms and procedures governing management of knowledge in cyberspace. The second context relates to ways in which the configuration of cyberspace enables new ways of developing, shaping and distributing knowledge in real or physical arenas.

In other words, the causal logic is this: One set of influence flows from the “real” world to the virtual domain. The other set of influence flows from the uses of “virtual” functionalities that shape the diffusion and management of knowledge routed toward throughout the “real” or physical domain.

In addition to directionality, each side of this causal logic is dominated, if not shaped and managed, by different actors and interests, driven by different purposes and motivations. As a result, the overall nature of the knowledge industry is becoming increasingly complex in both real and virtual venues.

The development of CyberPolitics reinforces the salience of political elements in all aspects of social discourse by providing an added venue of interaction, namely the virtual arena. We are already witnessing the impacts of the virtual on knowledge formulation and codification. The jury is still out with respect to the net effects. Again, on the one hand, knowledge is more widely available and accessible. On the other hand, the ‘democratization’ of knowledge provision raises important questions pertaining to quality and reliability.

At the same time, however, evidence shows that *Wikipedia* is not better and nor worse than the *Encyclopedia Britannica* in the quality of its content. This finding is alarming or gratifying – depending on one’s perspective.

We must also consider the unrelenting technological changes shaping the nature of the cyber venues. Not only the ‘hard’ technology is changing but also, more so is the supporting managerial and organizational systems. We have already observed major changes in the knowledge industry and in knowledge provision processes.

Finally, we take note of increasing returns, a concept noted earlier. This concept has assumed considerable importance in relation to knowledge, the knowledge economy, the knowledge industry, and all knowledge-related initiatives. It is especially relevant throughout the causal logic sketched above. Moreover, the weightless interactions associated with cyber venues reinforce these dynamics.

Concepts & Complexity

As a process, the management of social transformation is driven in part by the goal of reframing, even replacing economic growth as the dominant value of human activity. Many of the definitional issues raised earlier signal politics-in-process, so to speak, with the authoritative outcome still to emerge. To the extent that cyber venues strengthen the configuration and circulation of ideas, its instrumental functions are obvious.

There is a powerful disconnect between the analytical representation of unrestricted economic growth, on the one hand, and the requisites essential to the formation and management of sustainable development, on the other. This disconnect is becoming apparent even in domains of ‘high politics’. In April 2007, the United Kingdom – in its capacity as President of the United Nations Security Council – formally argued that climate change threatens the security of all states and that the Security Council should acknowledge the importance of moving away from the carbon economy.

This argument is the first instance in which the threats to the human condition induced by climate change and is brought to the UN Security Council as a *security threat on a global scale*. The knowledge base that points to such threat is persuasive in its scientific basis, but highly contentious in its political and social implications.

From a political perspective, cyber venues strengthen and reinforce dominant cleavages on most issues. However, we posited earlier, when the issues themselves are vague in their formulation, the same dynamics that reinforce contentions operate in a way to help consolidate emergent and yet unformed views.

Institutional Knowledge

The interconnections between CyberPolitics and the politics of institutional development are already structured around politically created fault lines. For our purposes, two features of knowledge *content* in the domain of sustainable development are especially relevant. The first is that content is *knowledge-bearing*; in other words, every item considered as relevant to sustainable development must contain some specific meaning and provide added value to overall understanding. The second feature is that the subject matter, the content itself, is amenable to *intellectual organization* – should that not already be the case.

In any context and for any purpose, we must converge on a formal definition of what it is that constitutes *knowledge*. For any substantive domain of interest we need to define a formal rule or set of rules to delineate the relevance of any category of knowledge or any particular knowledge item therein.

To the extent that we can develop a viable perhaps even an integrated and coherent knowledge base for the “management of social transformation”, we will be able build selectively upon, even reframe, and select features of the corpus of economic growth theory developed over long periods of time. At issue are the ways in which we characterize the ‘vicious cycle’ of continued environmental degradation and threats to social systems and their viability, and potentials for transformation into a ‘virtuous cycle’ reinforcing environmental resilience and strengthening propensities toward sustainability.

VII. End Note

We conclude this paper by putting forth some brief, but important, observations.

1. Politics is ubiquitous: it is everywhere. There is not such thing as a-political knowledge. At best, we can hope for knowledge provision and development with *explicit* rather than values, goals, and attendant assumptions.
2. All 'knowledge' content is not created equal. Some has greater value than others. The value is contingent on the quality, reliability, replicability, portability and contextual relevance.
3. The value of a knowledge management system is directly connected to its framework (and ontology)—irrespective of the underlying goals of the initiating institution.
4. The most challenging knowledge systems to design and develop are those that seek to address multi-disciplinary issues or to represent societies under conditions of change.
5. Knowledge management of the *changes* in the content of knowledge is especially daunting when the *content-of-knowledge* is, itself, about the nature and characteristics of social change.
6. Policy, as politics, is ubiquitous. But the context and the conditions are always distinctive. Knowledge systems focusing on policy issues can seldom assume that 'one size fits all'.
7. The emergence of sustainability sciences as a new knowledge domain provides a major opportunity to address social change in an integrated way, taking into account interactions with nature and environmental parameters.
8. The forging of cyberspace enables the development of CyberPolitics, thus reinforcing the salience of political elements by providing an added, virtual, mode of

interaction, , thus augmenting venues and opportunities for engaging in the politics of knowledge.

9. The decentralization of knowledge provision, enabled by cyberspace, creates new challenges for all modes of knowledge management. By definition, this challenge seriously undermines the traditional model of knowledge development and sharing, namely one dominated by central coordination. Distributedness as a mode of operation and coordination is gradually superseding central control.

10. Driven by mission, all institutional knowledge must be viewed in the context of the goals and objectives of the organization and its constituencies. This is true of education and research institutions as it is of governmental and intergovernmental organizations.