

# Networks, Social Norms and Knowledge Sub-Networks

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**ABSTRACT.** Networks and the World Wide Web seem to provide an answer to efficiently creating and disseminating knowledge resources. Knowledge, however, is ambiguous in character, and contains both explicit (information) and tacit dimensions – the latter being difficult to value as well as to transfer. Participant identity, commitment and behaviour within the network also affect the sharing of knowledge. Hence, existing laws and norms (including property rights) which have been established on the basis of discrete transactions and monetary value-oriented exchange may not be adequate to deal with the whole spectrum of knowledge transfer. A model is needed to address transfer across a large heterogeneous network. We introduce the concept of sub-networks where tacit knowledge resides and argue that considering social norms underlying trust and other informal mechanisms provides a more suitable basis for understanding the exchange of tacit knowledge. Norm establishment is complicated by the fact that values differ across cultures; however, the social norms that underpin sub-networks can sustain knowledge transfer within them. The purpose of this conceptual article is to introduce the concept of sub-networks and to identify the sub-network/network relationship as an area in which it is necessary to look beyond property rights and raise the issue of norms. We believe that an analysis of the role of social norms in knowledge sub-networks and their interaction with global networks points to a key element in understanding networks and any emerging theory of network ethics in the twenty-first century.

**KEY WORDS:** networks, knowledge norms, moral agency, standards, social norms, property rights, sub-networks

## Introduction

A key issue for global knowledge network management in the twenty-first century is how to create

a framework of sub-networks which are dynamic and effective because of their cohesion – around shared norms – yet are not separatist, disruptive or selfish because of the differences between their norms and those of other sub-networks. This article is about the need to recognise the role of norms in the field of knowledge transfer in global network settings, particularly where tacit knowledge transfer is concerned. It advocates attention to the importance of the new concept of “sub-networks” based on social norms.

We identify norms as an essential aspect of knowledge transfer and we focus on the idea that these norms support knowledge transfer at the sub-network level rather than at the global network level. We recognise that there is an issue for knowledge managers in that effective sub-networks, being based on specific sets of norms, may also be divisive.

Knowledge, unlike its codified counterpart, information, has a tacit, cognitive, uncoded dimension that is largely unmeasurable or unobservable. Not all knowledge is alike, and generally, two seminal authors, Michael Polanyi and Gilbert Ryle, are cited as arguing for the tacit-explicit difference (Millar, 2008). Ryle’s distinction between “knowing-that” and “knowing-how” (Ryle, 1946, 1949) was in fact developed for other purposes and it is Polanyi (1959) who should be credited with drawing attention to the distinction between explicit knowledge and tacit knowledge which most management and organisation theory researchers follow.

Explicit knowledge is codified knowledge and thus often similar to information (Grant, 1996; Spender and Grant, 1996). Knowledge codification reduces the cost of knowledge acquisition because information becomes searchable, identifiable, accessible, transferable, reproducible and storable (Cowan and Foray, 1997).

Spender has argued that the boundary between the explicit and tacit types of knowledge is both porous and flexible, and hence that there is traffic between the domains (Spender, 1996, p. 50). However, much knowledge remains tacit (Nelson and Winter, 1982); tacit knowledge represents a vital area of knowledge generation, transfer and dissemination (Senker, 1995), and much research is still needed to understand capture and transfer of tacit knowledge. Inkpen (1998) stresses the point that tacit knowledge is more difficult to formalise, impart, exchange or purchase, because it resides in people's beliefs, experiences, values, organisational routines and institutions. Many of these are group-specific rather than globally homogeneous. This creates a challenge for global networks which in principle offer the hope of integrating the knowledge of fragmented, scattered and often thinly spread focal points. We will consider the nature of knowledge transfer and the role of norms in tacit knowledge transfer, leading us to introduce the term "(knowledge) sub-networks", where tacit knowledge resides, to enable further discussion.

The literature makes it easy to believe that the internet makes networks global and hence provides an answer to efficiently creating and disseminating knowledge resources. We posit that even if the internet creates global networks that are relatively standardised, the reality of full knowledge transmission still relies on the smaller groupings or sub-networks for tacit knowledge transmission. The global transmission of tacit knowledge calls for overarching structures that can key into the intensity of sub-network relationships.

Our focus on the need to consider the role of norms in this area differentiates us from those who wish to analyse transmission of knowledge in networks purely in terms of classical concepts of open marketplace exchange. We accept that dealings in intellectual property rights (IPR) are usually perfectly feasible for easily transferable information, but stress that they have the defects of being uncertain in their application and hard to enforce in the field of tacit knowledge. Hence we propose that the understanding of how such knowledge is valued, transferred and shared is best approached through the analysis of the role of social norms in knowledge sub-networks and their interaction with global networks. We note that sub-networks behave like a

club, a closed community that trusts its members and keeps others out, a club that more likely tends to follow social norms, rather than formal laws and regulations.

The trust that is built up in (or is the basis of) sub-networks is a major part of the reason they are a suitable basis for the exchange of tacit knowledge. Hence we argue that the sustainability of sharing tacit knowledge within a (sub)-network is dependent on the development and maintenance of informal institutions such as trust, fairness and respect.

This article's structure is the following. First we discuss the concepts of networks and knowledge sub-networks and what these entail. Since within the knowledge "marketplace" the special characteristics of tacit knowledge result in a need for trust as a basis for efficient functioning, our next section covers uncertainty and knowledge sharing, followed by a section on the particularities of exchange transactions in knowledge sharing. Next we focus on the core of our article: the role of social norms such as those underlying trust that are built up in (or form the basis of) sub-networks in knowledge transfer. Our final section covers participation in the global network, followed by the conclusions and suggestions for areas for further research.

## Networks and knowledge sub-networks

Several writers have argued that to remain successful over time, any type of result-oriented network faces complex issues of collective ownership and social bonding (Carcello, 2009; Davies, 2009; Etzioni, 1988; Olson, 1965; Ostrom, 1990). This is especially the case when the members of the network are from heterogeneous backgrounds and value systems (Reagans and McEvily, 2003). In today's global business environment, successful networks require actors from different countries, regions and professional backgrounds, incorporating such heterogeneity or diversity within the network.

A major driver for such global networks is the expectation that they will provide superior access to knowledge because of the range of participants, experiences and situations represented, and that they will provide financial benefits because of working through such a network. The possibility of

exchanging economically useful knowledge would appear in terms of neo-classical economics to create the conditions for a “collective rational outcome” through the forces of the famous invisible hand. On this basis it would be expected that a network in which knowledge was drawn from a large and diverse global population would have assured success. Research in other social sciences such as law, economics, social anthropology and political science has shown, however, that such collective rational outcomes are not assured. This is especially the case when the size of the group, network or community is large (Etzioni, 1988; Hardin, 1982; Olson, 1965). Other factors need to be taken into account to determine the conditions for success.

A pointer to this is the observation that for networks to be successful in business interactions they require collective interests and sharing amongst network members, but at the same time will require mechanisms to “exclude” outside non-members from the benefits of the network (Hardin, 1982). The operation of this is similar to that described by the concept of “club goods” in law and economics, whereby participants pay a type of club fee (or make a contribution, such as their knowledge) for membership, share collectively the benefits, but at the same time exclude non-members – thus preventing free riding on the resources and assets of the network (Carcello, 2009; Davies, 2009; Olson, 1965; Ostrom, 1990).

In the case of knowledge there is an additional problem for the operation of the “invisible hand” to ensure smooth functioning of a network simply on the basis of value obtained relative to value contributed. For knowledge, the value to the recipient is dependent on the recipient’s situation as much as the transmitter’s, making it difficult to define financial or other tangible criteria for assessing the contribution made and the benefits obtained.

Where the knowledge concerned is mainly tacit, this becomes yet more difficult, and this difficulty of assessing and balancing value contributed and obtained is further enhanced when the actors in the network are from diverse, heterogeneous backgrounds and value systems. In combination with human capacity issues similar to those identified by Dunbar (1993), this rules out tacit knowledge sharing on a “club” basis, as described above, across a large global network.

Nonetheless there are circumstances in which knowledge – and even tacit knowledge – is transmitted through network structures. However, much literature (Serenko and Bontis, 2004) on this subject is focussed on the mechanisms [especially technical support such as knowledge management systems (KMS)] or on macroscopic issues such as cultural distance. We believe that this and the tendency to use the term “network” too generally and generically, especially in the social science literature, has led to too little attention being paid to the analysis of the factors and structures that support knowledge transmission in such contexts.

For these reasons we are introducing the concept of knowledge sub-networks. We define sub-networks as smaller groups within networks which are characterised by shared norms; these provide the basis on which tacit knowledge can be created, shared and transferred. In explaining and investigating this, we reveal the significance of norms and hope in this way to contribute towards a richer analysis of the complex area of network ethics.

Within the knowledge marketplace the special characteristics of tacit knowledge make it the most difficult to fit into the classical economics-based “exchange” model. In our next section we discuss the role of uncertainty as a trigger for sharing; in the section following that, we then identify such sharing as an appropriate mechanism for the transmission of tacit knowledge.

### **Uncertainty and knowledge sharing**

Researchers in social anthropology and evolutionary psychology such as Cosmides and Tooby (2002) have shown that within communities there is a tendency towards greater collaboration and sharing when there is significant “variance” in the environment. The term variance refers to an increase in uncertainty, randomness and difficulty for actors obtaining basic survival ingredients such as food. When variance increases there is a tendency for these communities to share valuable resources. When variance decreases the actors become relatively more competitive and anonymous in their exchange, and community-wide sharing decreases (Cosmides and Tooby, 2002).

From this we can develop an analogy to the impact of variance and uncertainty for individual businesses associated with the globalisation of business – the increase in uncertainty due to rapid change and developments in technology and communication – the information revolution. The expectation would be that as in the case of increased variance or a crisis bringing together the actors in a community, variance in global uncertainty for businesses can induce firms to create alliances to share the resource that is critical for their survival – knowledge. When uncertainty decreases, as when an industry matures, then the firms in turn will become more competitive, less open to sharing and more inclined to govern their relationships through market-priced transactions. This will tend to shift the actors' behaviour from flexible sharing of knowledge to attempts to assert exclusive rights and focus on anonymous, transactional exchange of information. We suggest therefore that in the twenty-first century there is need to develop familiarity with knowledge sharing, particularly to respond to the variability of the business environment.

At an operational level this is reflected in such semi-formal mechanisms as industry “best practice” groups and communities of practice. These reflect the impetus to the formation of knowledge networks as uncertainty increases due to rapid and continuous changes in the global business environment. The sharing behaviour which such mechanisms call for differs from market-based transactions in that it creates a relationship embodying a norm of reciprocal sharing – without an expectation of discrete value-for-value exchanges.

Burt (1992) points to the importance of repeated interactions amongst the actors as being basic to the development of a network. If the transaction involved is the sharing of knowledge, this raises issues of IPR. A network based on only exchange of information, or codified knowledge, can function using existing rules and regulations regarding IPR; however, if the knowledge to be transferred is relatively tacit and implicit (Millar, 2008; Polanyi, 1957), the nature of the exchange and transactions cannot be the same as the IPR regime which reflects rules originally developed for the exchange of tangible assets such as capital, plant or equipment. The sharing, and its continuation on a repeating basis, needs to be underpinned by some other relationship

amongst the parties in the network. In particular, we argue, the sustainability of sharing tacit knowledge is dependent on the development and maintenance of trust. It is important, however, to place this in the context of the specific nature of tacit knowledge transfer, and in the next section we will focus on the particularities of exchange transactions in knowledge sharing.

### **The exchange transaction in knowledge sharing**

The concept of exchange is widely used in research in most social science disciplines; it is especially relevant for analysing co-operative relationships. As a concept, exchange is applied more widely than simply to firms or networks; it has a weakness in that it does not have a single central definition. In economics research, exchange involves a transfer of multipurpose money, and leads to self-gain for the actors in the exchange, as a general part of individual rational behaviour (Ostrom, 1990). To anthropologists, exchange is important in terms of the function it can play for a particular group of actors, or organisations (Elster, 1989; Levi-Strauss, 1969). In psychology and sociology research, exchange is seen as a joint outcome of a relationship between actors. Hence, although a central definition of exchange is lacking in social science research, we can deduce that the participant in an exchange engages in motivated action to meet the needs or wishes of another. Typically the motivation is the expectation (or repayment) of a reciprocal action; and in much economic literature it is assumed or argued that the reciprocal action that is elicited provides a measure of value – and that value “received” by each party will tend to be in balance. Whilst we disagree that (particularly in the case of knowledge) there needs to be a balance of purely monetary value for those involved, we think the consideration of reciprocity is important.

The concept of social market exchange (Blau, 1964) is applied to situations where the collective actions of actors linked by a social bond affect the nature of exchange and enforcement of agreements (Etzioni, 1988; Hardin, 1982). In such situations the need to continue to participate in the group provides an enforcement mechanism to ensure the desired measure of sharing and reciprocity. In the case of

exchange of knowledge-based resources and assets through ad hoc and looser mechanisms such as networks, the issue of enforcement raises crucial questions about the effectiveness both of particular formal legal institutions (Millar et al., 2009) and of informal institutions such as general social norms. A main question is how the nature of exchange in networks differs from the nature of exchange in markets for non-knowledge resources, whose value is easier to measure and much more tangible (Choi and Millar, 2006). We address this in the discussion below, taking the issue of property rights and their enforcement as the paradigm.

### Norms and the enforcement of rights

As noted above, the nature of co-operation requires repeated exchange amongst the actors in the network (Burt, 1992). For such repeated exchange to be sustainable, actors in the network need to understand and accept each other's property rights. In the social science literature there are two major definitions of property: a traditional more legal definition of property rights, which is closely concerned with the rights given by the state, and the more recent economic definition of property rights (Carcello, 2009; Cheung, 1969; Davies, 2009; Demsetz, 1967), which is linked to the economic value of assets or resources. Based on Barzel (1997), we propose to distinguish these two concepts as follows: Economic property rights are the end which actors ultimately seek, whereas legal property rights are the means to achieve the end.

Property rights require recognition as well as enforcement of the rights (Barzel, 1982; North, 1990; Posner, 1996). Legal property rights tend to be recognised and enforced by governments and the state. However, Ellickson (1991) has shown that in various communities even in highly law-based societies such as the United States, social enforcement can replace the role of legal contracts and agreements. North (1990) has stated that "how agreements are enforced is the single most important determinant of economic performance...".

The intangibility of knowledge as an asset makes the definition of property rights and the transfer, exchange and protection of such rights especially problematic (Choi and Millar, 2006; Fray, 2006;

Steinmueller, 2004). The existing research on networks and the importance of social structure and relationships amongst organisations (Burt, 1992) assumes that such enforcement is relatively automatic, ensuring a smooth transfer and protection of economic property rights. This becomes more possible if there is an assumption about homogeneity in the backgrounds of the actors that are members of the networks, and for example, in related research, Landa (1981) has shown how ethnic backgrounds can play a crucial role in the formation of successful networks, which in turn rely greatly on informal, social codes and mechanisms for achieving co-operative- and trust-based results.

However, the actors in today's global business environment are from diverse and heterogeneous, rather than simple and homogeneous, backgrounds. The nature of global competition has created strategic networks and collaboration amongst actors from different nationalities, industries and cultures. The fact that such diversity complicates co-operative decision making is a well-researched area in various social sciences such as social anthropology, law and economics (Posner, 1996; Schelling, 1960), although this point has been relatively neglected in management research. This diversity is further complicated by the continuous change and uncertainty in today's global business environment. All these factors lead to the conclusion that, in contrast with Burt's (1992) study on the enforcement of property rights in free market exchange, the enforcement of property rights of intangible assets such as knowledge in diverse global networks is not automatic.

Given the example of uncertainty about enforcement of property rights, it is not surprising to see that efforts to build "KMS" for the transmission of knowledge on a large scale have often met with limited success. He et al. (2009) propose a social capital construct (Adler and Kwon, 2000; Maak, 2007) to account for variations in observed usage of a KMS system. This identifies as significant the three factors of tie strength, trust and shared norms. On the contrary, in an earlier study, Bogenrieder (2004) found no consistent positive effect from tie strength on its own, which suggests that the other factors need to be present if a KMS is to be successful.

The importance of trust and social norms is further suggested by research on team formation and dynamics, which indicates that strong social and

cognitive bonds can emerge in small groups, even internationally and across cultures. The growth of such bonds is found to be associated with knowledge transfer, but not with mere exchange of information (Choi and Thompson, 2005; Esteves, 2009; Kincaid, 2004; Reus and Lamont, 2009).

In the case of tacit knowledge particularly, Sun (2009) highlights the twin variables of “motivation to transfer” and “ease of transfer” as fundamental to successful transfer. In this case again the significance of trust and shared norms emerges, since a lack of these will reduce motivation to transfer. Furthermore it has also been argued that the level of cognitive agreement that is needed for successful transfer is associated with the growth of strong social bonds and shared values (Dhanaraj et al., 2004). Whilst Feldman (1984), following Shaw (1981), takes the view that groups only develop and enforce norms that are important to group survival and functioning, other studies suggest that a wider spectrum of norms governing social interaction, including friendship (Esteves, 2009), can have a positive effect on the sharing of knowledge.

These considerations indicate, in our view, that it is through norm-governed groups that the increasingly important process of tacit knowledge transfer is most effectively mediated. Such groups, when they are part of larger networks, can be treated as sub-networks. The relationship between sub-networks with their specific sets of norms and the broader overall network then becomes a focus for research.

### Participation in the global network

Knowledge is a good that is most often presented in a fragmented form, scattered over sites and communities, territories or institutions. Networks help to globally restructure such elements of knowledge into goods and services of economic and social value. Centuries ago, craft guilds in Europe helped to collect and disseminate knowledge regionally (Epstein, 1998). Industrial clusters and science organisations have provided this function in more recent times (Carcello, 2009; Davies, 2009; Fray, 2006).

When sub-networks are part of a larger, global, network – as in the twenty-first century knowledge-society – the added value that is created by the cooperation within the sub-network can either

become available to the wider network or remain in the domain of the sub-networks who may protect their knowledge and not share it with the broader group of network participants. This difference indicates that other variables are at work; our contention is that in order to develop a theory which covers how these other variables function, it is necessary to accept the existence of the network/sub-network contrast. The different sub-networks are often culturally diverse and may have different views of what norms should apply; they may look for special advantages or obstruct knowledge development and sharing, or they may try to build their members’ reputations.

In considering the functioning of a global network it is helpful to recall the definitions of data, information and knowledge, which differentiate data as measures of the level of a variable, information as data that has been given a structure and knowledge as information that has been given a meaning by an organisational or individual interpretation process (Fray, 2006). A strategy for knowledge sharing across a global network is codification. Knowledge codification reduces the cost of knowledge acquisition because codified knowledge becomes searchable, identifiable, accessible, transferable and reproducible.

However, knowledge can remain tacit, and tacit knowledge has a central contribution to knowledge generation and distribution (Millar, 2008; Queiroz and Wood, 2008; Steinmueller, 2004; Vaccaro and Madsen, 2009). Tacit knowledge is more difficult to formalise, impart, exchange or purchase because it involves peoples’ beliefs, experiences, values, organisational routines and institutions (Polanyi, 1957). Reinforcing the argument that there is a need to transfer knowledge from the sub-networks across the overall network Rodan and Galunic (2004) have shown that access to heterogeneous knowledge is of importance for managerial success and particularly for innovation.

Social norms, social bonds and informal institutions are fundamental to such knowledge sub-networks. Following the conclusion that social bonding and trust-based exchange may be most effective in small numbers (Blau, 1964; Hardin, 1982; Sahlins, 1972; Simmel, 1978), we posit that the most effective tacit knowledge sharing is likely to occur in smaller sub-networks, typically held

together by distinctive social bonds and norms. This suggests the need to allow for sub-networks following their own norms and social bonds, even though they may be part of a larger global network with more general, explicit, rules.

Two issues arise that will require further work: First, how the tacit norms and rules of sub-networks are reconciled in cases of conflict, and second, whether and how the tacit knowledge accumulated within sub-networks is put at the disposal of the wider network.

### Conclusions and further research

In this article we have tried to find conceptual apparatus that helps us understand knowledge transfer in networks; we identified norms as an essential aspect of transfer, and focussed on the idea that these norms are at a sub-network level, not a global network level. We also recognised that there is an issue for knowledge managers in that effective sub-networks, being based on specific sets of norms, may also be divisive.

This article was about the need to recognise the importance of norms in the field of knowledge transfer in global network settings, particularly where tacit knowledge transfer is concerned and cross-cultural (or cross-network) diversity is observed. We argued that networks and the acceleration of global communication and knowledge dissemination required the creation of social norms, habits, and customs to coordinate knowledge creation and knowledge dissemination that includes both explicit and tacit knowledge.

Knowledge is ambiguous in character, intangible and difficult to value. Hence we observe that existing laws and norms (including property rights) which have been established for information transfer, which is more explicit and readily transferable than knowledge, may not be adequate to deal with both explicit and tacit knowledge transfer, particularly across networks. Rather, we argued that social norms underlying trust and other informal mechanisms were a more suitable basis for governing exchange of tacit knowledge. In a global setting, norm establishment is complicated by the fact that knowledge valuation and values in general differ across cultures (and across networks). We recognised

the potential of integrating fragmented, scattered, and thinly spread knowledge. Networks and the World Wide Web seemed to provide an answer to efficiently creating and disseminating knowledge resources, but the shared norms required to underpin knowledge transfer were absent in the case of global and multi-cultural networks and these were likely only to be suited to codified resources.

We introduced the concept of sub-networks, based on their shared norms, and postulated that such structures are suited for, and apparently used for, sharing of knowledge, particularly tacit knowledge. Given that it is in sub-networks that tacit knowledge resides, the global transmission of such knowledge calls for overarching structures that can key into the intensity of sub-network relationships. Our logic in this follows the saying in innovation studies that there is a limit to the size of innovation groups: we posit that sub-networks, or much smaller groups, can be the focus of intense knowledge transmission. Networks create communication of explicit knowledge, but sub-networks are needed – but not guaranteed – to create the conditions for full knowledge communication.

A key contribution of our approach is in showing how to move away from classical concepts of marketplace exchange and IPR in characterising knowledge transfer in networks. Such approaches have the defects of being hard to apply and enforce and of being problematic in themselves in relation to knowledge. Our analysis of the role of social norms in knowledge sub-networks and their interaction in global networks pointed to a key element in understanding networks in the twenty-first century. The literature makes us believe that the internet makes networks global and hence global knowledge transmission exists. We discussed that even if the internet creates global networks that are relatively standardised, the reality of full knowledge transmission still relies on the smaller groupings or sub-networks for tacit knowledge transmission. Sub-networks behave like a club, a closed community that trusts its members and keeps others out and that tends to follow more social norms.

The trust that is built up in (or is the basis of) sub-networks is the reason they are a suitable basis for exchange of tacit knowledge. Thus the sustainability of sharing tacit knowledge within a (sub)-network is dependent on the development and maintenance of

informal institutions such as trust, fairness and respect.

We also argued that when uncertainty decreases, as when an industry matures, or the economy improves, firms will become more competitive, less open to sharing, more inclined to govern their relationships through anonymous, transactional exchange of information and market-priced transactions. We suggested therefore that in the twenty-first century there is need to develop familiarity with knowledge sharing, particularly to respond to the variability of the business environment.

The objective of this article was to try to move beyond the term “network” which is used much too generally and generically in most of the social science literature and allow for the complexity and richness that ethics requires to have a place and be understood. Having introduced the term “sub-networks”, we identified the network–sub-network relationship as an area in which it is necessary not just to look at rights/property rights/IPR but raise the issue of norms.

We believe two levels of social norms co-exist: conventions particular to professions, groups, locations and situations, and more universal norms and habits. MNCs and others operating globally need to be aware of and accept the co-existence of both such types of norms.

The manifest belief that global networks can be the source of useful knowledge transfer therefore implies some mechanism whereby the localised norms of sub-networks can be reconciled with each other to provide a basis for global sharing. This reconciliation may mean looking for a common denominator that is an approximation of rather than the definitive set of common norms.

We note the general belief that the modernisation of societies will lead to a greater use of formal institutions (Posner, 1996; Santos and Laczniak, 2009) but conclude that the tacit (Millar, 2008; Polanyi, 1957) and intangible nature of knowledge might nonetheless require the greater use of informal institutions. This leads to our conclusion that knowledge networks are a case where the role of social norms and ethics is particularly important and worthy of study, both for their intrinsic interest and because of the growing appreciation of the importance of knowledge networks and the expanding

number of global networks claiming to transfer knowledge.

At a practical level we may conclude that although networks and global communications are recognised as fundamental to the economic and social system of the twenty-first century, there is a need for greater investigation and study of the integration of the laws, norms and standards that are required in a more knowledge resource-driven business system. A major conclusion of this article is that in a knowledge-based society, the importance of informal institutions such as norms, conventions or customs may be even greater than that of formal institutions such as common law or civil law. A key issue for global knowledge network management in the twenty-first century is how to create a framework of sub-networks which are dynamic and effective because of their cohesion – around shared norms – yet are not separatist, disruptive or selfish because of the differences between their norms and those of other sub-networks.

Three areas warrant further research. First, there is a need to further develop conceptually how informal institutions such as norms can be effectively combined with the two major legal systems, the formal institutions of common law and that of civil law. Secondly, further research is needed to examine the mechanisms used to ensure effective knowledge transfer despite the different norms of sub-networks – especially mechanisms that are more effective than (intellectual) property rights. And thirdly, new social norms being created by the global internet and IT communications require further research.

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