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On Using Philosophy to Define and Dignify the IS Discipline

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On Using Spheres of Meaning to Define and Dignify the IS Discipline

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ABSTRACT

Trying to understand whether information systems is a discipline and what that discipline might be has taxed IS scholars for over 20 years. This article suggests a new approach, which views disciplines in terms of what is meaningful to those who work within them. Making use of the philosophical notion of 'spheres of meaning', and one well-thought-out suite of such spheres, the core of the IS discipline may be understood, giving it dignity among its neighbours, so as to maintain dialogue with them. By this approach, we may understand what the responsibility and destiny of the IS discipline might be.

Keywords: Information systems discipline, disciplines, spheres of meaning, aspects, philosophy, Dooyeweerd.

1. INTRODUCTION

The questions "What is the IS discipline?" and "Is IS a real discipline?" have exercised many thinkers over the years, and have been approached in different ways. In a key paper, Benbasat and Zmud (2003) argued why it is important to establish an identity for the IS discipline, and suggested a number of core characteristics, which they link together into a model that can help us decide which issues to include or exclude. Other authors have approached the questions by reviewing the patterns shown by papers in top IS journals. Some have drawn together specific issues (e.g. Wernick, Shearer and Loombes, 2001). Yet others have applied philosophy within the IS discipline in relation to certain issues that the IS community believes challenge them (e.g. Winder, Probert and Beeson, 1997).

This paper uses philosophy to understand what the IS discipline is, but in a different way. It applies philosophical thinking to the topic of IS as such, and in so doing tries to throw some light on what its core interest might be, how IS may be related to other disciplines, and how we might expect the IS discipline to develop.

What we aim for here is to provide a way of approaching the IS discipline that covers 'the whole story that is IS', rather than any selection of fields within it, in a philosophically sound manner, and yet in a way that might be fruitful in generating useful new insights for research and practice. What is meant by 'the whole story' cannot be precisely defined but may be illustrated by the various answers that might be given to a question like "Why is it that IS so often fail?":

- Is it because our technologies are not yet good enough?
- Is it because we do not use IT in the right way or for the right things?
- Is it because information systems development (ISD) is inefficient?
- Do we too readily accept the way IT controls our lives, and the assumption that IT is the solution to everything?
- Are our very assumptions about the nature of computers and what they can do for us mistaken?

These questions indicate the stances, respectively, of those who create information technology, those who use IT in their lives, those who develop systems for human use, all of us who are impacted by the way society has been shaped by IT, and those who are curious about what computers are, and they might be posed, respectively, by researchers in computer science, human factors, IS development, society and technology studies, and artificial intelligence. 'The whole story that is IS' embraces these, and more.

This paper does not assume that IS is currently a discipline, but rather discusses what direction we need to take if IS were to be a discipline. The concepts of science, discipline and field will be used as follows. Both science and discipline involve specialised knowledge, but whereas science is concerned with abstracting from everyday life in order to formulate generic knowledge, a discipline employs the knowledge in the service of everyday life in an orderly manner and with some normative direction. A discipline involves both research and practice. 'Field' here is used to indicate an area of study or practice that is somewhat smaller and narrower than a discipline.

The link with everyday experience is important. 'Everyday' can include work as well as non-work life. It implies that any attempt to understand a discipline must take a pre-theoretical rather than theoretical attitude in so doing. A theoretical attitude approaches with a lens that abstracts certain aspects (Clouser, 2005), focusing attention solely on these, and as a consequence filters out many others. A pre-theoretical attitude, by contrast, is open to the diversity of aspects that are meaningful in the discipline, while also recognising something of its unity.

2. APPROACHES TO UNDERSTANDING THE IS DISCIPLINE

Several approaches have been taken to understand the IS discipline.

2.1 Empirical Approaches

One approach frequently used to identify what the IS discipline is, is to collect together what seem to be the various fields or areas of research and practice that can be discerned. Wernick, Shearer and Loomes (2001), for example, collect together: the nature of software, software development, software systems in external, 'real world' context, data and information held and modified within the system, the development, evolution and decommissioning of individual software systems, individual cycles of development, the languages, tools, notations and process models used in software development, the nature of the world as expressed in individual notational (textual or graphical) elements.

More recently, Sidorova et al. (2008) has undertaken semantic analysis of articles in three top IS journals from 1985 to 2006, which shows that the IS discipline has consistently concerned itself over this period with four types of relationships, between IT and individuals, groups, organisations and markets, together with IS development. This is a very different collection of issues from that of Wernick et al.

This kind of approach has the advantage that it can be pre-theoretically sensitive to the real life of the discipline, but while some of the issues or activities might be grouped together, there is no sound basis for preferring one collection over the other, for understanding the relationships between issues, nor for situating the discipline

among others. One might wonder to what extent the prior choice of source journals affected the outcome of both these studies.

That IS is strongly interdisciplinary in nature makes such exercises more difficult. Agarwal & Lucas (2005) suggest that IS researchers are better at interdisciplinary research than social scientists are because they understand the nature of technology, but call for IS to avoid being too narrow and to recognise organisational issues. Orlikowshki and Barley (2001) discuss the interplay with organisational studies, emphasising the embeddedness of technology in a complex social, economic and political environment. That this keeps on changing implies continuous learning is important.

Most discussions of the IS discipline mentioned above look back to what has happened in their recent past. Though this can ground discussions in the reality of the discipline, it can make it rather difficult to set a course for the future.

2.2 The Core of the IS Discipline

These approaches do not, however, provide a sound basis for identifying the core of the discipline. It is important to do so because having a core can reduce the need to define disciplinary boundaries precisely, it can give the discipline confidence in relating to neighbouring disciplines, and it can provide direction for the future, so that the discipline is not always tossed about by the waves of its environment and the variable winds of fashion. Identifying the core of a discipline thus gives it dignity and destiny and indicates its responsibility to the wider world.

A healthy discipline engages with its neighbours in open dialogue and in a spirit of mutual respect. The neighbouring disciplines of IS include computer science and organisational studies. That the IS discipline has a crisis of identity (Agarwal & Lucus, 2005) suggests it has yet to be sure of its core. The IS discipline should not close itself from any of its neighbours, but should be aware of what is meaningful within them. It should recognise that the neighbours are neither rivals to be kept away, nor mere resources to be used, but are fully human activities like itself. With organisational studies the IS discipline stands in the role of an enabler, in that information enables organisations to function better both internally, between themselves and in service of the world. With computer science, IS stands in the role of

a user, in that it employs the generic information technologies constructed by computer science, e.g. knowledge representation languages, software libraries and digital transfer protocols.

2.3 Finding Core Characteristics

How may the core of a discipline be identified? Benbasat and Zmud (2003) provide an example of an approach that does try to understand the relationships between main issues of the discipline. After arguing the need to establish an organisational identity for IS, they propose a model in which the IT artifact is at the centre, surrounded by a concentrically expanding environment of use: tasks, organisational structures and wider contexts. From this they construct a 'nomological net' (which contains a causal model) around five core concepts to be properly included in IS research: the IT artifact, usage, impact, "IT managerial, methodological and operational practices" and "IT managerial, methodological and technological capabilities". They end with rules of thumb for judging whether research is within the IS discipline, which employ quantitative assessments of the proportion of constructs and relationships falling within the nomological net.

While Benbasat and Zmud's proposal illustrates the core characteristics approach, it also illustrates some problems with it, and an examination of these is instructive. First, they employ one theoretical lens to understand what a discipline is, rather than being open to everyday experience within the discipline. Specifically, depending on Aldrich, who sees IS scholars "as a community of nascent entrepreneurs attempting to create a new population" they view the discipline through the biological metaphor of organisms competing in an environment. Using a misleading metaphor restricts them to two types of legitimacy (cognitive and socio-political), ignoring, for example, philosophical legitimacy.

Second, they presuppose what they want to argue for: the distinctness of the IS discipline. In stressing the IT artifact, they claim "it is problematic to publish research excluding the IT artifact and/or elements from its immediate nomological net in the IS journals" (p.189), but the reason given why this is so is that "such research makes ambiguous the boundaries of IS scholarship, thus raising questions regarding its distinctiveness ... with respect to related scholarly disciplines."

Third, they tend to treat the IT artifact as a black box, despite warning against doing so in their conclusion. That is, they give little attention to the composition of the artifact, and their treatment of the process of its coming into being (conception, construction, implementation) is very brief. Their approach sees only development of IS for human use, and is insensitive to the diverse realities that are important in the neighbouring discipline of computer science. Lack of empathy for neighbouring disciplines might arise from a desire to draw clear boundaries - which is a tendency found in biological disciplines, but is less appropriate to human disciplines of which IS is one. As a result, their approach provides no fruitful way to link with the neighbouring disciplines.

2.4 Philosophical Approaches in IS

Many have tried to understand the scope of the IS discipline by reference to fields that currently exist or major issues that are discussed. There does not seem to be a sound basis on which to differentiate one field from others, relate them, or adjudicate between conflicting demands and expectations. It may be that philosophy can provide such a basis since, whereas sciences focus on single aspects of reality (e.g. physics, psychology, sociology), philosophy is the 'integrative' discipline, which allows us to think across the divides between the sciences (Hart, 1984). Good philosophy provides the basis on which we can not only differentiate such aspects, but understand the relationships between them.

The debates in the IS community assume various philosophies and assign various roles to philosophy and Lyytinen (2003) calls us "to explore the content of the underlying philosophical argument in these debates [of the IS community] and what role they assume to the philosophy as a field of inquiry." When we do this, however, we find at least four different ways in which philosophy has been used.

Artificial intelligence has long appealed to philosophy to address the question of whether computers can think. This debate has, however, tended to be rather technical and narrow, and limited to this specific question.

Philosophical Aspects of Information Systems (Winder, Probert and Beeson, 1997) is more useful to us, since it contains a number of papers in which different thinkers try

to apply philosophy more widely in IS. It is a collection of stimulating chapters by various authors, about ethical and political issues, language and meaning, methodology, organisational issues and physical issues. Unfortunately, it is difficult to obtain an overall picture from this kind of approach, especially one that helps identify the core of the IS discipline. Moreover, some important issues are omitted, such as knowledge representation.

A more cohesive philosophical approach is exemplified by Winograd and Flores (1986). They attempted to formulate a coherent, philosophical framework for understanding computers and how we (should) use them, based on Heidegger's philosophy with some resort to other philosophy. Their argument is, in the main, well-written and persuasive, and their work is now classic and widely referenced. But there have been criticisms of it (Spaul, 1997), not least in that it provides no basis for critique and modification of the structures of society. Perhaps a more fundamental problem is that they add Searle's speech act theory to Heidegger. Spaul points out the radical incommensurability between these two. Trying to combine philosophies can be dangerous.

Mingers and Willcocks (2004) *Social Theory and Philosophy for Information Systems* is an important work, which explores the potential of a range of philosophies without trying to combine them. It takes the opposite direction from that of Winder et al. (1997), in that each chapter discusses a particular philosophical position and then how it can apply in IS. Table 1 lists the philosophy introduced in each chapter, along with the IS issues to which it is applied.

Table 1. Philosophies and IS issues in Mingers & Willcocks.

Ch.	**Philosophy**	**IS Issues**
1	Social theory and philosophy in general	Definition of IS Attitudes to IS
2	Functionalism and neo-functionalism	Unintended consequences of IS use IT governance in organisations
3	Phenomenology of Husserl and Heidegger	"What is a screen?"
4	Hermeneutics	"Why did the IS fail?"

5	Adorno's critical theory	IS research paradigms "ISD is on-going" Conflicts in IS practice
6	Habermas' critical theory	IS used to assist agreement Philosophical foundations for IS research Challenges for future IS research
7	Foucault's notion of power/knowledge	History of technological practices in society (incl. surveillance, automation) Future direction of IT in society IS as a discipline
8	Structuration theory	IS impacts society Society impacts IT IT in organisational life
9	Social shaping of technology	How worldviews shape IT Politics of ISD and IS use
10	Critical realism	Realist stance in IS research Multiple methods in IS research
11	Complexity and IS	'Network-in-use' Specifying IS to be developed Higher level impacts of IS use

This collection of issues emerging from philosophical treatment could be used to define a core, but it is better to see what philosophy itself can do to define the core. The contributions in this work emphasise organisational and societal issues. It is difficult, however, to differentiate some of the discussions clearly from social science, thus providing little indication of the unique and important contribution of the IS discipline. In the prevalence of discussions on IS research rather than IS practice, they evince an inward-looking mentality in the IS discipline.

The main problem becomes clear when we ask ourselves "What's missing?" Well-served by these applications of philosophy are the IT-society relationship, IS use in organisations, and IS research paradigms. Less well-served are the everyday experience of the individual, philosophical guidance on designing a good IS, and appropriate knowledge representation languages. Even in relation to society, the view is narrow because it presupposes global economic growth, accelerating technical 'progress', and that it is the proper destiny of all humanity to live technologically. As a result, the major issues of climate change, economic collapse, the unhappiness of today's children, and the importance of religious faith are seldom seriously addressed,

for example to understand what specific contribution to them the IS discipline can offer.

The work as a whole seems to reflect a philosophical bias common today, which downplays ontology (which is important when considering knowledge representation, for example). As the editors admit, many philosophers were omitted, including Bourdieu, Luhmann, Merleau-Ponty, Maturana. Early (pre-Kantian, especially Scholastic and Greek philosophy) thought is almost entirely absent, as are process philosophy (Midgley, 2000) and cosmonomic philosophy (Eriksson, 2009). Yet even if these were included, the approach in Mingers & WIllcocks might not yield a completely coherent understanding of what IS is all about, because it does not show how these different philosophies could work together to help us understand the core of IS.

Perhaps the most useful chapter to help us identify the core is Lee's (2004) discussion (chapter 1). He argues that the notions and interests of technical, social and sociotechnical systems are not enough, but that (p.13) "information itself is a rich phenomenon that deserves its own separate focus no less than either information technology or organizations." But where can we locate this rich phenomenon? Lee does not say, though he points hopefully and vaguely in the direction of hermeneutics and systems theory. He then goes in another direction, discussing the prevalence of inductive positivism in IS, which offers little help to us. To understand what is this 'rich phenomenon' let us consider an alternative approach.

3. ALTERNATIVE APPROACH: SPHERES OF MEANING

The proposal of this paper is that the core of a discipline is a sphere of meaning. In any discipline certain types of things, relationships, properties, occurrances and norms are meaningful while other types are less so. The things that are most meaningful may be thought of as forming a sphere centred on some 'meaning kernel'. Things that are less meaningful are in other spheres of meaning centred on other kernels. For example, the discipline of psychiatry is centred on feeling, emotion and response, and it is things related to these that are researched and given more attention in the work of

the discipline. Things like which type of computer a person owns are less important, since ownership and type of technology are meaningful in other spheres.

Though centred on a single sphere, the work and research of the discipline reaches out to other spheres, which are progressively less meaningful. For example, in psychiatry the biological functioning of the person is also important, but not so directly important as the psychical functioning. In some disciplines more than one kernel might be central.

If we adopt this proposal, can we identify a sphere of meaning that is the core of the IS discipline? If we can, this will indicate the types of things with which it can usefully concern itself, that other disciplines do not. This might give the IS discipline its dignity, destiny and responsibility.

This notion of sphere of meaning has intuitive appeal, but is it valid? What are spheres of meaning, and what ones are there in reality? These questions must be addressed by philosophy. Most philosophies have not much addressed them because of the types of presuppositions on which they rest. Greek philosophy presupposed we can view reality as a dialectic between form and matter, Scholastic philosophy presupposed we can view it as a dialectic between nature and grace, and philosophy since then has viewed reality largely as a dialectic between nature (mechanism) and freedom (Tarnas, 1991; Dooyeweerd, 1979), though this has many guises. For reasons that it is not appropriate to discuss here, all these presuppositions have hindered most philosophy from exploring the notion of spheres of meaning.

3.1 Spheres of Meaning

However, there is a relatively new stream of philosophy which has made spheres of meaning an object of exploration, known as cosmonomic philosophy, of which the main proponents are Dooyeweerd (1955/1984) and Vollenhoven (1950). The approach here is grounded in this. Eriksson (2003, 2009) explains how it escapes a number of problems that have plagued the IS discipline (related to positivism, interpretivism and critical theory) because it presupposes neither Form-Matter, Nature-Grace, nor Nature-Freedom but the biblical-semitic notions of Creation, Fall and Redemption.

If we look at everyday experience of IS, the first thing that strikes us is its great diversity of meaning, and this is where Dooyeweerd started (1955/1984). He argued in depth that for 2,500 years theoretical thought has hidden rather than revealed the structure of reality partly because it tends to reduce the diversity of spheres of meaning and elevated the sphere in which reason is important. Whereas other philosophers have tried to escape this by dialectically reacting against its elevated aspect, it was the Creation, Fall, Redemption presupposition that freed Dooyeweerd to recognise positively both the diversity and coherence of meaning in everyday experience without trying to reduce diversity, nor to let it fragment and lose coherence.

Based on a lifetime of reflection, together with a number of philosophical devices, Dooyeweerd delineated fifteen spheres (which he also called aspects or law-spheres), each with a distinct kernel that cannot be reduced to others. The words 'aspect' and 'sphere' will denote the same thing from here. The aspects or spheres Dooyeweerd delineated are listed in Table 2 with their kernels; the 'sciences' column is used later.

Table 2. Dooyeweerd's suite of aspects/spheres.

Sphere	**Kernel meaning**	**Science**
Quantitative	Amount	Mathematics
Spatial	Continuous space	Geometry, Toplogy
Kinematic	Movement	Mechanics
Physical	Energy, mass, forces, material	Physics, Chemistry, Materials and Fluid sciences
Biotic / Organic	Organism, life functions	Biology, Ecology
Psychic / Sensitive	Sense, feeling, response	Psychology
Analytical	Distinction, concepts, logic, pieces of data	Logic, Analytical science
Formative	Structures, construction, processing, goals, technique, technology, history	Design science
Lingual	Symbolic signification	Linguistics, Semiotics
Social	Social relationships and institutions, roles, respect	Social sciences

Economic	Frugality, management	Economics, Management science
Aesthetic	Harmony, enjoyment, humour	Aesthetics
Juridical	Due, reward, punishment	Legal science
Ethical	Self-giving love, generosity	Ethics
Faith / Pistic	Vision, commitment, certainty, belief	Theology

Other thinkers, especially from the systems community, have also tried to delineate aspects, because it is a natural response to the diversity of everyday experience to attempt to delineate different aspects that need to be taken into account when analysing any thing or situation. They did not see them as spheres of meaning, however, and called them by different names, such as:

- Bunge (1979): Physical, chemical, biological, social, technical levels;
- Hartmann (1952): Inorganic, organic, psychic, historical, supra-individual strata;
- Habermas (1986): Instrumental, communicative, strategic, normatively regulated, dramaturgical action types;
- Maslow (1943): Biological, safety, enquiry, expression, affiliation, esteem, aesthetics, transcendence, self-actualization needs;

Which suite of aspects is 'best'? We cannot know for certain because, as Dooyeweerd has said (1955/1984,II,p.556):

> "In fact the system of the law-spheres designed by us can never lay claim to material completion. A more penetrating examination may at any time bring new modal aspects of reality to the light not yet perceived before. And the discovery of new law-spheres will always require a revision and further development of our modal analyses. Theoretical thought has never finished its task. Any one who thinks he has devised a philosophical system that can be adopted unchanged by all later generations, shows his absolute lack of insight into the dependence of all theoretical thought on historical development."

We should not go to the opposite extreme, however, as implied by Kant, which assumes that we can never know reality. Dooyeweerd argued that the world is 'friendly' rather than 'hostile' to human knowing, and that it tends to reveal rather than hide itself, though our knowing can never be absolute.

It is because he recognised this, because his suite of aspects is more comprehensive than others, because he explored the nature of aspects more penetratingly than most other thinkers, because he spent a lifetime in sensitive reflection on what aspects there might be, taking account of philosophical thinking over 2,500 years, and because he also provided philosophical tests for aspects, that we will adopt Dooyeweerd's suite of aspects here in order to understand disciplines.

Dooyeweerd saw aspects as a framework of meaning and law that makes all temporal reality possible, giving rise to existence, occurrence, rationalities, normativity and so on (Basden, 2008). Other thinkers seem to have been reaching for something similar. For example, Heidegger (1971) pointed to something like this when he discussed the problem underlying the discipline of poetry:

What is poetry? Something written by poets.

What is a poet? Someone who writes poetry.

There is something behind both, he suggested, which defines and enables them. Foucault (1972) also pointed to something similar when he spoke of 'discursive formations'. Clouser (2005) is much more precise. An aspect may be seen as a basic kind of properties and laws; for example, physical properties and laws, aesthetic properties and laws, logical properties and laws.

3.2 Using Spheres to Understand and Situate Disciplines

What do we do when we engage in scientific activity? We focus our analytical and other (e.g. discursive) energies on a way in which reality is meaningful to us (i.e. a sphere of meaning or aspect), largely ignoring others (e.g. physicists focus on physical laws and properties, and treat such things as the religious faith and economic status of the researcher as secondary). Dooyeweerd argued that each aspect defines the central interest of a scientific area, defining the types of entities, processes and laws with which each science concerns itself. See Table 2.

What do we do when we engage in disciplinary activity? Again, we focus on certain things that are meaningful to us (a sphere of meaning), but, unlike science, we are also

guided by the norms inherent in the sphere of meaning, for example the lingual form of understandability or the juridical norm of justice.

It was crucial to Dooyeweerd that in their mutual irreducibility of meaning, the aspects (spheres) also relate to each other. One important relationship is inter-aspect dependency, such that the proper functioning in one aspect depends on that in another. For example, the psychical functioning that is of interest to psychiatry depends on biotic functioning as a foundation or substratum. Thus psychiatry cannot ignore the biotic life functions of the patient. Psychical functioning also anticipates, and is affected by, functioning in later aspects, the person's analytical, formative and social functionings; so psyschiatry cannot ignore these either.

All disciplines may, therefore, be seen as centred on one sphere of meaning, while also concerning themselves with others, as depicted in Figure 1 for psychiatry and management. Some disciplines might have two aspects at their centre, for example social psychology, and when this is so usually one is primary. The (sub)discipline of customer relationship management has both economic and social aspects at its centre.

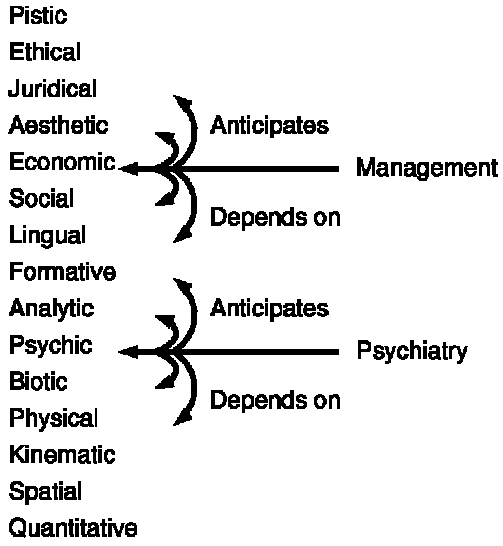

Figure 1. Aspects meaningful to disciplines

3.3 The IS Discipline

With this understanding we might now approach the discipline of information systems. Though definitions of information vary (e.g. Alavi & Leidner, 2001; Checkland & Holwell, 1998), common to almost all of them is the assumption that

information involves symbols standing for or signifying something. Symbolic signification is what Dooyeweerd delineated as the kernel of the lingual sphere. To ignore this signification - for example, focusing solely on data types or structures as mathematical constructs and never anything more than that - does not do justice to what we mean when we talk of 'information systems'. Thus the IS discipline might be usefully understood as a centred on ...

the lingual aspect. Necessary to this is the notion that the information or symbol structures of any information system signify something of importance to human beings, especially its users and developers. This is commensurate with the volume of literature in the discipline concerned with IS use and development.

As with any discipline, the surrounding aspects are also important. In the foundational direction, these include:

The formative aspect is important in several ways. The structure of the information is a valid topic of IS research and practice. Second, it is important in the creative human activity of IS development; this may explain why Sidorova et al. (2008) found IS development important in the IS literature. Third, it is important in that IS involves technology, technique and artifact, which corresponds with Benbasat & Zmud's (2003) contention that the IS discipline must never forget the artifact. Fourth, the notion of failure and success touched upon in the Introduction is a formative notion.
The analytic aspect, whose kernel meaning is distinction and conceptualization of the world, is exhibited within an IS as individual pieces of data: 'objects', variables, etc. The interest of the IS discipline in these matters is only marginal, but it prevents the artifact being treated as a black box.

In the anticipatory direction, the IS discipline concerns itself with the following aspects or spheres of meaning:

The social aspect, is important in several ways. Information as signification must be interpreted not only subjectively but also intersubjectively, with inescapable cultural connotations. Most applications of IS are social in nature, serving to create, establish, improve (or destroy, undermine or reduce) relationships between people or social

structures. This explains why Sidorova et al. (2008) found groups, organisations and markets so important in the IS literature, and it confirms the importance of interaction with organisational studies (Orlikowsky & Barley, 2001).

The economic aspect is important in two ways. One is economy of information resources such as limitations on disk space and screen area. The other is that a traditional application of IS has been in business.

The salience of these aspects or spheres of meaning is depicted in Figure 2. Dooyeweerd contended that all activities and entities do in fact exhibit all aspects. If this is so, other aspects may be expected to play a part in various ways, though not shown in the figure, for eample: the aesthetic (e.g. style of web sites), juridical (emancipatory IS (Hirschheim and Klein, 1994), ethical (the impact of IS use on attitude), faith (worldview inscribed into the technology (Adam, 1998)).

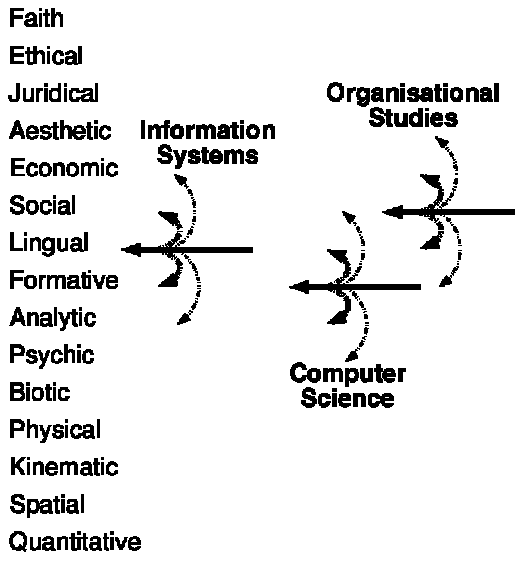

Figure 2. Structure of the IS discipline and neighbours

The neighbouring disciplines of computer science and software engineering are particularly interested in data processes and structures, and in methods of program construction, program correctness in relation to its goals, etc. Such things are centrally meaningful in the formative sphere, and may be studied in these disciplines without much consideration of what they signify. Thus these disciplines may be seen as centred on the formative sphere in Figure 2. The analytic sphere is of more relevance

to them than it is to the IS discipline since it is concerned with distinctions between types of data. The psychic sphere becomes relevant, e.g. via assembly language and machine code, because within it pre-symbolic states and signals are meaningful (Basden, 2008). The first sphere in the anticipatory direction is the lingual; computer science will often concern itself with what the symbol structures mean, especially in general terms. Other spheres or aspects play a part; Knuth argued (1984, 2001) that aesthetics and even faith are important in computer science.

The other neighbouring discipline, organisational studies in its various forms, is centred on the social sphere, with the lingual sphere (communication) and formative sphere (organisational structures) in support, and the economic and aesthetic sphere being anticipated and affecting it. See Figure 2.

We are now in a position to offer Lee (2004) the "rich phenomenon" that he believes is missing to those who try to characterize the IS discipline as 'sociotechnical'. The aspects of which 'sociotechnical' speaks are the social and formative, leaving a gap between them: the lingual aspect. This is the aspect of information itself, which was identified, though not discussed, by Lee. The proposal made in this paper not only provides a philosophical basis to support Lee's belief, but also provides a core that may be opened up in its own right. Likewise, we can see why both Wernick et al.'s and Benbasat and Zmud's approaches are one-sided. Wernick et al. (2001) focused on the pre-lingual aspects, while Benbasat and Zmud focused on the post-lingual aspects, with both requiring some issues meaningful in the lingual aspect.

The core characteristics of Benbasat and Zmud (2003) may be derived from the aspects above: IT artifact is formative, usage is lingual, impact is social, management is economic and capabilities and operations are formative. Note that they overlook the analytic aspect, which might explain why they are unable to see the difference between the construction of an IS for a specific application (formative-lingual) and generic types of data (analytic-formative).

Finally, centring the IS discipline on the lingual aspect is not quite enough. Linguistic disciplines are also centred on the lingual aspect, so what differentiates the discipline of IS from them? While there is a close connection between IS and lingusitics as, for

example, argued by Basden and Klein (2008), we can clarify the difference by the role the formative aspect plays. In linguistic disciplines, the formative aspect takes on a much more subservient role, concerned only with the structure of language, whereas in the IS discipline the formative aspect is also important in respect of the technological artifacts by which information is mediated and the human structures within which it operates. This is indicated by the word 'system': a whole that is deliberately constructed.

4. DISCUSSION

The proposal in this paper is that the discipline of information systems can be defined and situated by reference to the spheres of meaning that are most important to it: the lingual sphere at its centre together with foundational and anticipatory spheres, the analytic, formative, social and economic. This approach establishes a core sphere of meaning for the IS discipline, not just a collection of core characteristics. Our discussion above has developed this to suggest that the central object of interest to the discipline is the human, everyday activity of meaningful signification that is mediated by technology, in which both structure and socially intersubjective meanings are important. The neighbouring disciplines of organisational studies and computer science take the lingual aspect of their work somewhat for granted but the IS discipline makes it the focus of its study and work. This provides it with central identity.

4.1 How This Approach Helps Us

This approach helps us in a number of ways:

It helps differentiate the IS discipline from others with which it might become confused, such as computer science or organisational science. It shows why 'sociotechnical' is not enough to describe the IS discipline, and provides the 'rich phenomenon' sought by Lee (2004).

It was key to Dooyeweerd that all spheres of meaning are equally important, and thus the lingual aspect is just as important as the social and economic. This affords dignity to the IS discipline, which it has so far sought with little success.

It removes the need, assumed by some approaches, to seek a precisely drawn boundaries in order to place topics exclusively within one discipline or the other. Several disciplines can be interested in the same topic, with none claiming exclusive right; they will simply find the topic of interest in different ways according to its various aspects. For example, Internet-enabled social networking involves the formative, lingual and social aspects, and may thus be of interest to computer science, IS and the social disciplines. Boundaries are allowed to be fuzzy.

This approach provides a basis for respecting neighbouring disciplines and maintaining fruitful dialogue with them. Since the IS discipline concerns itself with the aspects either side of the lingual, it should be at least aware of the major issues and debates going on in neighbouring disciplines that centre on these, and will have a basis on which to understand them immanently (in their own terms) rather than reducing them to its own central sphere of meaning.

As partly demonstrated above, this approach is able to engage with and support other approaches, thus providing a basis on which all their valuable work may be integrated.

Finally, this approach provides a basis for discussing the direction the IS discipline should take, a destiny that gives hope and clear responsibility. How this is possible is explained in the final section.

4.2 Limitations

There are a number of problems that need addressing. One criticism that has been levelled at using Dooyeweerd's aspects is: Is not the need to fit everything into a suite of aspects rather rigid? It can indeed become rigid if the aspects are used only as categories, without an awareness of the inter-aspect relationships and ignoring the important insight that no set of aspects can every be final. But this is a misuse of Dooyeweerd. He was reluctant to define his suite, only once listing it in his *magnum opus* (1955/1984), and then only informally, because he did not intend it to be used as rigid categories. The aspects, rightly understood, are highly dynamic and allow a myriad of views, because they are the spheres of meaning that make the taking of views possible. Aspects should not be seen as giving answers, nor even giving

questions to answer, but as providing spaces that help us formulate questions that are stimulating and important.

Another limitation is that though we might be able to situate the IS discipline in a high-level way, this on its own does not generate concrete guidance for IS research and practice. To achieve this involves considering how human beings relate to the lingual and other important aspects; the five questions in the Introduction indicate five such ways. Recognising them enables us to formulate frameworks for understanding which are highly practical, tentative examples of which may be found in Basden (2008).

4.3 Responsibility, Destiny and Hope for the IS Discipline

Dooyeweerd critically examined the notion of historical progress and suggested that progress in human history is constituted in the opening up (disclosing) of the potential of all the aspects. Humanity's project of science has opened up the analytic aspect, the project of technology has opened up the formative, and the project of democracy has opened up the juridical aspect. In similar vein, humanity's project of information technology and systems contributes to the opening up of the lingual aspect.

To Dooyeweerd, each aspect plays a different but necessary part in making life richly 'good'. The role of the lingual aspect is to allow what we mean (intend, believe) to be set down outside our minds in a way that is persistent and sharable, thus enabling communication and facilitating social functioning. The IS discipline has a mandate to open up the possibilities of this kind - along with other information technologies like writing, printing, film. Just as writing opened up the possibility of persistence, printing opened up the possibility of broadcast, film opened up the possibility of dynamic signification, so computer technology now opens up the possibility of interactive signification, offering new forms of communication and social functioning. This gives the IS discipline a distinct responsibility, destiny and hope for the future.

Dooyeweerd made clear however that the opening of any aspect should be guided, not by its own norms, but by the norms of other aspects, especially those later than itself. Each aspect should serve the interests of others, not its own interests. So the opening of the lingual aspect by the IS discipline should be guided by the norms of all other

aspects. To some extent, this is already the case in that it has been guided by the norms of the economic aspect (as it has been primarily applied in business) and, more recently, the social aspect (e.g. social networking, email). Extending this to other aspects leads to an expectation that the IS discipline might also be guided in future by the aesthetic norm of harmony, the juridical norm of justice, the ethical norm of self-giving, and the faith norm of commitment and vision. Wikipedia might furnish an example of the potential of the lingual aspect being guided by norms of the ethical aspect, in that it eschews advertising and seeks to be a service. To date, however, this is an exception, and the norms of these four aspects should become much more apparent in IS. In these days, now that we understand more clearly our responsibility for the future health of the planet, for a healthy global economic system, and for the happiness of our children, this message of each aspect serving the others has never been more important.

The dignity of IS as a discipline is that it opens up interactive signification in the service of other aspects - and especially to assist in meeting these major challenges - in a way that no other discipline can. The good news is that some of this is already happening via the Internet. The bad news is that this is happening despite rather than because of the academic side of the discipline that is information systems. Therein lies our challenge.

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