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Towards a wider scope of using information in organization

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TOWARDS A WIDER SCOPE OF USING INFORMATION
IN ORGANIZATION

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ABSTRACT
Information plays a crucial role in organizational life. We may say that no organization can exist without information. However the current use of information in organizational life is restricted mainly to serving planning, control and operation activities. The paper proposes to extend the scope of using information
(1) to organizational diagnostics
(2) to promote learning in organizational, and
(3) to manage culture.

The organizational metaphors associated to these three uses are organizations as organism, brain and culture respectively. For different uses of information, the desired features of information are different. Correctness is desirable when information is used for organizational diagnostics while relevance and pertinence are more important when information is used in a learning context.

Key words: informational use, organizational metaphor, organizational studies, diagnostics, learning, culture

ACM Categories: H.I.M., H.Y.O., K.G.O.
1. INTRODUCTION

Every field of study has one or several concepts that tie all other concepts together. In other words, they are the key organizing concepts of a discipline. In the natural sciences, we have the concept of energy. In political science, we have the concept of power. In organizational studies, we have the concept of information.

INFORMATION AND ORGANIZATION

The importance of information in organizational studies has long been recognized by researchers of organization and management. Three decades ago, Forester (1961) developed a method based on a network of information to study industrial system. It investigates how policies, decisions, structures and delays interact to influence growth and stability. Called industrial dynamics, it integrates the separate functional areas of marketing, investment, research, personnel, production and accounting. Each function is reduced to a common basis by recognizing that any economic or corporate activity consists of money, orders, materials, personnel and capital equipment. These five networks are integrated by an information network. This network enjoys a unique status by virtue of central and interlocking relationship which causes other networks to act on one another. In doing so, Forester is generalizing the role of money in economics analysis and accounting models. Financial information becomes a special, though still crucial, aspect of the more generalized information.

Of a more recent date, the role of information in the study of the value chain in the life-cycle of a product is emphasized. According to Porter and Millar (1985), every value activity has both a physical and an information-processing component. While the physical component includes all the physical tasks required to perform the activity, it is the information-processing component which encompasses the steps required to capture, manipulate, and channel the data necessary to perform the activity. They stressed further that every value of a product uses information and more important, creates information of some kind. To illustrate: A logistics activity uses information like scheduling promises, transportation rates and production plans to ensure timely and cost-effective
delivery; a service activity uses information about service requests to schedule calls and order parts and generates information on product failures that a company can use to revise product designs and manufacturing methods.

At a higher level of abstraction, Galbraith (1973, 1977) sees an organization as a complex system which has to collect and use information to reduce uncertainties in their interactions with the environment. The models proposed by Homans, the Tavistock School, Likert, Kahn, Cyert-March-Simon, Thomas-Duncan and Perrow can be seen as information processing models and the problem of organizational design can be viewed as a matter of information utilization in the service of organizational goals (Schein 1986). It has even been suggested that in the longer term, organizations may become synonymous with their information systems (Morgan 1986).

Given the crucial importance of information, it has the potential to support and promote the mosaic of activities in an organization. But up till now, its potential has not been fully exploited. Business organizations, for example, limit the use of information mainly to planning, control and operation activities. It is the result of the perception of organization as machine which sees the tasks of management as planning, coordination and control. Its imprint is obvious in a standard textbook of Information Systems by Davis and Olson (1985). In this paper, we argue that information can be used for three other purposes:

1. To monitor the state of health of organization.
2. To promote learning in organization.
3. To manage culture in organization.

Every use of information assumes a metaphor of organization. The three proposed uses of information assume the organization as an organism, brain and culture respectively.

The paper is organized as follows: Section 2, 3, and 4 discuss the use of information for organizational diagnostics, organization learning, and management of culture respectively. Section 5 concludes the paper with a discussion on some unresolved problems and some suggestions for further research.
2. USING INFORMATION TO MONITOR ORGANIZATIONAL HEALTH

Management Accountancy relies heavily on financial information to support the work of company's managers. As a discipline, it traces its roots to bookkeeping used centuries ago by merchants in their trading activities. However, management accountancy in its skeletal form may be said to have taken shape during the period of industrial revolution. It was a response to the need of manufacturers who wanted to know the cost involved in the various stages of producing an article. We may say that it is the financial counter-part of the Tayloristic investigation of a mechanical production process. At the turn of the century when companies merged and diversified, management accountancy grew in sophistication by developing techniques such as return-on-investment. With the separation of management from ownership, management accountancy has to produce financial figures to guide the investment decision of share-holders. These figures are geared towards the short-term profit motives of the investors. Managers in turn modify their activities and behaviours to cater to the demands of the investors.

THE INADEQUACY OF FINANCIAL INFORMATION

Meanwhile the business environment has become more competitive, the consumers are more demanding, technology more important to business functioning, and the legislature more encompassing. The shortcomings of the information provided by management accountancy are more and more evident. It cannot provide guideline for investment in technology, let alone for strategic and corporate decisions such as product diversification. The changing fate of management accountancy is recounted by Johnson and Kaplan (1987) who aptly subtitle their book as "the rise and fall of management accountancy". Besides pointing out the limited and short-term usefulness of financial information, they criticize its misleading aspects.

In the last few years, a number of researchers have joined Johnson and Kaplan in discussing the problems of relying so heavily on financial information. Among them is Eccles (1991) who urges companies to broaden the range of their performance indicators to include quality, customer satisfaction,
motivation and market share. He argues that these non-financial indicators reflect a company's economic conditions and growth prospects better than its reported profits. While the proposal is decidedly an advance over the restrictive theory and practice of management accountancy, the goal of using a wider range of information is still confined to planning and control.

It is worth noting that the paper by Eccles is based on a new course called 'Organization and Control' conducted at the Harvard Business School. Though not stated in the paper, Eccles assumes a machine metaphor of organization, which is the model guiding the idea of hierarchical organization, planning and control, and similar ideas stemming from Scientific Management.

BEYOND THE MACHINE METAPHOR

We do not dispute the value of the machine metaphor in IS, but we want to draw attention to the limits imposed by the metaphor on the use of information. The idea is to jump out of the confines of the machine model in order to widen the scope of information in management. As a modest attempt, we may look at an organization using organism as a metaphor.

Organizations are quite similar to organisms. Viewed as a system for production, a factory consumes raw materials, and produces waste products and useful goods. At the system level, it is very much like a living organism. As another example, we quote a passage taken from Haken (1988).

"One of the most striking features of any biological system is the enormous degree of coordination among its individual parts. In a cell, thousands of metabolic processes may go on at the same time in a well-regulated fashion. In animals, millions to billions of neurons and muscle cells cooperate to bring about well-coordinated locomotion, heartbeat, breathing or blood flow. Recognition is a highly cooperative process, and so are speech and thought in humans. Quite clearly, all these well-coordinated, coherent processes become possible only through the exchange of information, which must be produced, transmitted, received, processed, transformed into new forms of information,
communicated between different parts of the system and at the same time, we shall see, between different hierarchical levels. We are thus led to the conclusion that information is a crucial element of the very existence of life."

By having some words changed (e.g. biological system changed to organization) the passage would be a fairly good description of information flow in organizations.

**ORGANIZATIONS AS ORGANISMS**

If some important aspects of organization can be understood by using the organism metaphor what are the implications for our use of information in organizations? An age-old practice of using information produced in an organism is medical diagnostics. Doctors note down a range of information or signs given out by various organs of our body for a variety of reasons. They use the information to monitor our health, to assess our athletic performance and to diagnose an illness. Stealing some ideas from the medical profession, we can extend the scope of information in organization to beyond planning and control. An organization is a complex system. And a multi-product, multi-division big company and the like (e.g. a sizeable university, a government) are very complex systems. Problems develop in these organizations. Some can lie hidden for a long time unnoticed by those who are only interested in performance indicators. They have a long gestation period and cannot be made visible if we only use performance indicators such as quality, market share, customer satisfaction and return-on-investment for the purpose of planning and control. We suggest widening the range of information to be collected and at the same time extending the management use of information. More specifically, managers can use the information to monitor the short-term and long-term health of the organization, to assess its performance and to diagnose its problems. The pragmatic value of diagnostics has been recognized in organizational literature. Schein (1986) has this to say: "We do not as yet have many firm principles which can guide action, but a thorough understanding of and the ability to diagnose organizational..."
problems is, in any case, crucial as a basis for action."

Monitoring of organizational health and conducting diagnostics imply the idea of norms and models. Deviation from the norms suggests that there may be something wrong. In a very rudimentary way, accountancy does make use of the idea of norm, especially in the form of ratio's. We still lack well-tested models and related variables to monitor organizational health and diagnose problems. The book by Peters and Waterman (1982) is a search for models of excellent performers in the world. Some of these have in a few years (after the book was published) slipped from the tip-top conditions, which indicates the need for flexibility and creativity in the use of models.

Another model for the purpose of organizational diagnostics is the work of Kotter (1978) on organizational dynamics. He brings together the major parameters of organizational theory into a model for the purpose of analyzing short-term, medium-term and long-term organizational diagnostics. The seven factors or conceptual elements which he thinks are comprehensive for understanding and diagnosing the state of health of an organization are as follows:

1. key organizational processes such as decision-making, communication and so on;
2. the external environment eg. market, suppliers, competitors;
3. employees and other tangible assets;
4. formal organizational arrangements such as formal systems that have been explicitly designed to regulate the actions of an organization's employees e.g. work protocols, employees record or assessment sheets;
5. the social system including the social and culture structure;
6. technology;
7. the dominant coalition.

Bennis and Nanus (1985) give a simple method which can be used to provide some pointers to organization problems. They are informed by the application of personality theory in the mental health. Every person is a summation of various "selves". If these "selves" are not in communication, then
the person cannot maintain valid communications with other persons. The problem of integrity may be used for organizations by examining the "organizational selves." Every organizational has four "selves": (1) the manifest organization, the one that is seen on organizational chart; (2) the assumed organization, the one that individuals perceive to be existing; (3) the extant organization, the organization revealed through systematic investigations, e.g. by organization consultant; and (4) the requisite organization, the organization as it would look if it were in accord with the reality of the situation within which it exists. Every organization incorporates these four "selves" which are often at odds with each other, or exist in strained coherence. Ideally, the four selves are aligned as closely as possible with one another, which is of course not realised in practice. Whenever they are in grave contradiction, the organizational culture is such that its identity is confused and integrity difficult to achieve. Just as much as a healthy person brings into harmony his various "selves", a sound organization maintains harmony and knowledge about and among the manifest, assumed, extant and requisite "selves".

SELF-ORGANIZATION AND MINIMAL USAGE OF FORMAL INFORMATION

Organisms are so organized and constituted that one component can function or even survive quite independent of other components. This suggests the idea of self-organization, likely to be of interest to organizational designer. Multi-product and multi-division companies have in fact used the idea in setting up quasi-independent business units. Perhaps this idea can be extended to organizations keen to delegate decision-making as much as possible to the lower levels as well as to make the structure as flat as possible. In such construction, exchange of information among the different units of an organization can be kept to the bare minimum. Here we may borrow an idea, called "information hiding" from the military which has been applied with success in software engineering; it stipulates that only the very necessary information can be communicated in the interests of security. Here we are talking about formal communication. Informal communication within an organization should be
considered separately. We wish to draw attention to the study of March (1988) on the use of gossip and idle talk to sustain a network of communication among the system components. The network is crucial in emergency situation which demands rapid and smooth communication. This network is crucial to long-term survival of the organization.

Self-organization and monitoring organizational health have not been considered to be implications of the organism metaphor, in the wide-ranging survey of organizational metaphors carried out by Morgan (1986). Compatible with the use of the organism metaphor for self-organization are ideas derived from cybernetics which are treated under the brain metaphor (Morgan 1986). Our discussion suggests that the organism metaphor is a rather rich metaphor which can be used to generate ideas for organizational design and information uses.

3. INFORMATION TO PROMOTE LEARNING

The importance of learning in organizations is highlighted by Chris Argyris, a researcher of organizational learning. In a recent book, Argyris (1990) has this to say: "In a defensive organization it is possible to have high morale, satisfaction and loyalty because the participants can, without fear, distance themselves from their responsibility to organizational excellence... we are realizing that in order to achieve organizational excellence, learning, competence, and justice are a much more realistic foundation than are morale, satisfaction and loyalty. The first foundation, learning, pinpoints how errors are detected and corrected, especially errors that are complex and potentially embarrassing and threatening."

LIBRARY AS AN INFORMATION SYSTEM TO FACILITATE LEARNING

Given the importance of learning in an organization, we have to ask ourselves then, what is the means to carry out learning. To put it in a better way, how do we promote learning in an organization. Explicit learning in organization can be in two forms. Firstly, there is the direct organization of courses for the members either to give in-house training (practical and theoretical
aspects) or to send members to courses outside the organization. Secondly, there is the indirect way where learning can be acquired through daily instructions (verbal or written), through work protocols, through group discussions to make decisions and so on. Implicit learning as its name suggest is something less visible and obviously the means where implicit learning can take place or can be promoted is more difficult to describe. Nevertheless, we can identify some sources such as the socialization process within the organization, the integration and assimilation of the organization's culture process by a new member, the coffee break session, even conflicts, a quarrel or the organization of a party for the members, or even a boat trip: all these are means to facilitate learning within an organization. Information exchange takes place in each and every of these learning processes. The type of information, the way it is organized or not organized, the way it is being conveyed, intentionally or otherwise, the way it is being perceived and received, whether it is being acquired for processing in the human brain and stored in our memory as knowledge and so forth: all these would very much affect the learning effect of members within the organization. And when we look at information organized as systems, the significance of such systems of information or information systems on learning within the organization cannot be underestimated.

One of the oldest information systems is the library. At the beginning the library served as a keeper of documents (or archive) and a custodian of learned materials. The library in its present form has more of the second function i.e. as a centre to provide information services to its users and to promote learning and research. Thus the idea of using information systems to promote learning in an organization is not really novel. As such, it is certainly a surprise to note that the mainstream thinking in IS discipline is to use information systems for the purpose of planning and control. The surprise is even greater when we perceive the information revolution as the successor to the two earlier revolutions - the written language and the printed book (Simon 1977). These two earlier revolutions are very much associated with expanding our intellectual horizon as well as the growth and accumulation of knowledge.

Having warmed ourselves up to the relevance of IS to a learning
environment, we wish to discuss some characteristics of an IS in a learning environment.

To begin with, the requirements of information in a learning environment are not exactly the same as those in a planning and control environment. The highest goal of an IS in a planning and control environment is to provide in an efficient manner the correct information in the right format at the right time and place to the right person. It assumes that it is possible to ascertain all these "correctness and rightness" beforehand, and that the user knows what he knows. Or even if it is not possible, it is an ideal to strive for. However, in the case of a learning environment, we have to cope with the question of chance, the inter-related nature of our knowledge, and the fact that the user is a learning and intelligent human being. These three factors suggest that the information required by the user (a) cannot be totally determined beforehand, (b) has a loosely organized structure and lots of cross-references to other related information, (c) need not be factually correct.

As this may come as a cultural shock to those used to the mainstream IS literature, we shall briefly elaborate below what we mean.

**CHANCE FACTOR IN LEARNING**

Chance is an important factor in a learning process. Students and researchers appreciate the value of browsing through the shelves of a well-arranged library. Scholars and scientists take the trouble to attend conferences even though they do not know in advance exactly what will be discussed. Unexpected discoveries of useful information while searching for some other subjects have become a familiar aspect in a learning environment.

**CROSS-REFERENCE IN LEARNING**

At a syntactic and semantic level, one need to flip through an encyclopedia to convince oneself of the inter-related nature of various entries. Human geography makes references to history, politics, economics, culture, and so on. Every entry has cross-references to many other entries. But at a deeper
level, at an epistemological level or even metaphysical level, every discipline has something interesting to offer to another discipline, either by way of analogy, metaphor or insight. Our discussion in the previous section of organism as a metaphor in our use of information in organization is a case in point. At this level of abstraction, it is difficult to see how an IS can provide correct information in the right format at the right time and at the right place to the right person. Rather the purpose of an IS is to provide him with ideas and insights from other disciplines, to help him jump out of the narrow artificial confines of his own discipline, to let him benefit from the cross-fertilization of ideas. The history of various disciplines contains anecdotes of how ideas and insights from another disciplines have contributed to their intellectual armoury of advances. The distinguished biologist, Thomas H. Huxley, could be said to have anticipated this problem a century ago when he considered over-specialization as one of the greatest obstacles to progress in every field. Over-specialization tends to nurture a mind which focuses on details to the neglect of the structure as a whole. Our existing computerized IS is not designed with the view to draw the user's attention to the "structure as a whole". Partly this is a result of technological limitations, which may be less a handicap with the advent of hypertext and Artificial Intelligence techniques of text-understanding capabilities.

**FACILITATING BROAD LEARNING**

Besides providing ideas across disciplines, an IS in a learning environment can provide thought-provocative ideas, and ideas that challenge the deep-seated assumptions of the user to help him be aware of the shortcomings and strengths of his own knowledge as well as those of others. The user is assumed to be a thoughtful, reflective and open-minded person. In such context, information cannot be a correct fact or processed data. To quote from Foskett (1984), a researcher of library science: "We do not go to the play of Hamlet for Information on the History of Denmark, but only the most abandoned Philistine would deny that Hamlet has human value." "By the use of the creative imagination we can enhance the understanding of human experience, and transform the experience of the individual into an experience of general human significance. A
great author transcends time and space; Shakespeare is not of one age, but of all time. Each successive generation comes to such works, not simply for information in the sense of factual data (which is often wrong), but for insight into the human condition."

CORRECTNESS VERSUS RELEVANCE AND PERTINENCE

We may borrow the notions of relevance and pertinence as used by Foskett (1984) as more suitable requirements for information. Relevance refers to how well a piece of information is connected to the generally accepted body of knowledge of a subject. It is thus not of very special significance to a particular individual. Pertinence on the other hand refers to how well a piece of information has a "click" in the thought process and knowledge pattern of an individual. The information has very great value to the individual who is undergoing the intellectual agony of finding the missing piece in the whole puzzle. When located, it gives him the Eureka feeling which stirred Archimedes to utter the famous scream. Pertinent information is not necessarily accepted or recognized within the paradigm of a study. And it is with such pertinent information that our intuitive thought processes can flower and new, creative results can see daylight. Pertinent information may at first sight seem far-fetched. However, all great truths begin as blasphemies, as George Bernard Shaw once put it. It is admittedly very difficult for even the best librarian to know when, where, and to whom a piece of information can be pertinent. The best he can do is to erect no barrier between a reader and the book-shelves. The research community of any discipline must be tolerant and patient enough to listen to the case of anyone presenting the most absurd sounding thesis. The notions of relevance and pertinence stand in stark contrast to that of correctness. Perhaps the IS community needs time to get used to them. However on reflection, IS people are already using systems with outputs that are not totally correct, even though the dominant IS literature hammers on information "correctness". Expert systems provide the users with answers often in the form of heuristic, which are correct only most of the time. The works of Beer (1981) is also interesting in this respect. He observes that error is not the absolute enemy which we often thought it is. It is,
on the contrary, a precondition to survival. He asserts that whenever environment changes, through error, there is a possibility to generate new approaches and hence the move towards fresh adaptation too.

SOME ASPECTS OF ORGANIZATIONAL LEARNING

As mentioned earlier, we are using the brain as a model for organization in this section. No other organ in our human body exhibits so much learning behaviour as our brain. Our learning behaviours show at least the following features:

1. error detection and correction;
2. changing strategy and assumptions;
3. restructuring our value systems and assumptions; and
4. learning how to learn.

These four features are used to describe organizational learning by Argyris and Schon (1978). The first two features are associated with what is called single-loop learning, the third feature, double-loop learning and the fourth feature, deuteron learning. The first feature overlaps with our discussion in the previous section on the use of information for monitoring organizational health. It can occur without a conscious learning mechanism called the brain. Information for organizational learning can thus be categorized according to the four features and the design of such IS can be guided by the requirements of the information uses. As organizational learning is known in management literature as innovation, organizational re-design, change management, etc, one can draw on the experiences of IS developed for such purposes.

4. INFORMATION IN THE MANAGEMENT OF CULTURE

We can all agree that we live in a world of physical elements - air, water, food, houses, roads, etc. "But the world is more than that!" even a child would remark. Yes, our world (or better still society) consists of human ties, shared values, shared meanings and shared experiences. Whether consciously or otherwise, members of a society participate in a collective life.
Through such collective life evolve shared meanings, symbols, rituals, norms and values which are the invisible glue responsible for sticking disparate elements in our society together. To us as human beings these "invisibles" are as real and as important as the material objects, and therefore constitute part of the reality of our society. Sociologists have used the term culture to describe them. Culture as a process of reality construction allows people to interpret and understand particular events, actions, objects, utterances, or situations. It also provides a basis for making sense of one's own behaviour (Morgan 1986). To some people and in some circumstances, it exerts an influence more overwhelming than the biological instincts. It is powerful enough to motivate a person to achieve voluntary celibacy for life. He may choose to die of starvation because the available foods are branded unclean by his culture. It can even cause him to perform hara-kiri or shoot himself to protect his honour. "Culture is stronger than life and stronger than death." (White 1990).

**RELEVANCE OF CULTURE TO MANAGEMENT STUDIES**

The significance of culture is not lost on students of organizations. After all, an organization is a mini-society, and we use the term organizational culture to refer to the culture in this mini-society. Using social architecture for what we call culture here, Bennis and Nanus (1985) discuss its importance for leaders of organizations. Culture provides a shared interpretation of organizational events, so that its members know what is expected of them. It also generates a commitment to the basic organizational values and philosophy. At the same time, it serves as a control mechanism, approving or disapproving particular kinds of behaviour. Translated into the language of management, the most challenging task of a manager is not to make decision (as Herbert Simon would see it) but to transmit the desired vision. All these sound rather simple in theory. Though culture can, to a certain extent, be managed, to shape an existing culture into what is desired calls for wisdom, stamina and skill. Bennis and Nanus (1985) narrate the sad story of an ex-company president. He tried very hard to orientate the company from production bias to a marketing one. After six years of up-hill struggles, he surrendered and resigned. Luckily, there
are companies which have evolved a culture to cope successfully with fierce busi-
ness competition. All the excellent performing companies studied by Peters and 
Waterman (1982) have managed to create their own distinct cultures which bind 
accountants, engineers, marketing personnel, etc. together. One technique is to 
tell and re-tell certain stories intended to convey a message or meaning. In 
relating the innovative spirits of its founder in glowing terms, Hewlett-Packard 
wants its people to feel how much it values innovation.

There are many elements which contribute to the formation of a 
given culture. Without trying to ignore the importance of other factors, we 
would like to discuss in the next section the role of information systems such as 
the mass media.

THE MASS MEDIA AS INFORMATION SYSTEMS IN THE MANAGEMENT 
OF CULTURE

Our mind and our self-image arise in our social experience, in 
the process of interaction and communication with other people. And informa-
tion forms an indivisible component of this process. Dictators are keenly aware 
that they can mould the world-view and self-image of the people by controlling 
and manipulating information available to them. Information in a modern 
society can flow through many channels - informal chit-chats, letters, and most 
important of all, the mass media.

The mass media is a collection of information systems known to 
us as newspapers, magazines, radio and television. Control over the mass media 
is a crucial source of power, and many countries have legislature preventing 
either foreign ownership or concentration of it in the hand of a few individuals. 
In countries where the literacy rate is high and accessibility to the radio and TV 
is easy, the mass media becomes the most important means for presidential or 
parliamentary candidates to win the hearts and minds of the voters.

Business companies too are aware of the role of such media. 
They use it to promote a favourable image among the consumers and their 
would be employees, and even to influence public opinions in their campaign to 
secure tax cuts and government subsidies. Internally, every large company uses
the news-bulletin, notice boards, selective press clippings and speeches to shape
the thinking of the employers. The mass media as a collection of information
systems represents a radical departure from the type of information systems
associated with accountancy. The later draws from the tradition of scientific
management and the works of Herbert Simon. The former is influenced more
by sociology, cultural anthropology, linguistics, psychology and the study of mass
communication. As the reader may suspect, the metaphor of organization we
use here in this section is that of culture, as meant in (Morgan 1986).

INFORMATION AS A CARRIER OF IDEAS

Just as information used for learning, information here does not
have a well defined structure like in a database application. Information can
take the form of a newspaper report, a chit-chat, a letter or even gossips.
Drawing a psychological, sociological and anthropological study on gossips,
March (1988) finds that gossips have the following functions:

- it is a source of entertainment;
- it contributes to system maintenance;
- it is a way to communicate rules, values and morals (*);
- it facilitates the diffusion of community traditions and history (*);
- it facilitates the maintenance of exclusivity;
- it is a way to communicate rules, values and morals (*);
- it is a way to make friends (*);
- it is a way of protecting personal interests;
- it is a way of legitimizing collective action (*);
- it often reinforces existing beliefs by providing an interpretation
  of ambiguous experience that is consistent with them, and by
  offering a guide to existing social structure (*);
- it is a vehicle for social change;
- it is a mechanism for a collective reconstruction of reality in
  which existing explanations for the nature of things are modified
  and how sensibilities and ideas emerge and are elaborated (*).

Those functions marked with (*) are related to how members of
a society create and maintain meaningful relationships among themselves and with the outside world. They are functions performed not only by gossips but by literature, arts, and other activities related to cultural heritage.

Information in the context used here has a wide range of forms and structures. The feature underlying all such information is that it is a carrier of ideas. The piece of information may be exactly the same in all its structure and form, yet the idea it conveys can be diametrically opposite in different contexts.

CONCLUSION

It is almost commonsensical to say that organisation cannot and does not exist without information. The observation also implies that information has ubiquitous applicability in organizational life. However, to go further into specific applications of information, the type of information systems involved and the features of the information used is more problematic. One way to get some ideas is to be informed by the use of information in other profession and the types of IS available in history. In this paper we have found it useful to draw on the practice of medical doctors, the use of library as an IS to support learning and the use of the mass media as IS to manage culture.

Another point which we hope to bring out in this paper is the relation between organizational models, and the use of information and the features of information. Previous studies have shown the relationship between organization structure and the structure of IS. In this paper we suggest that there is some value in studying the relationship between organizational metaphor, and use of information and information features. Below, we represent these relationships in a table for better illustrative purposes.
The above table suggests that bringing organization metaphors into explicit consideration can generate ideas for IS research and practice.

A final note to round off the paper. Section 2 essentially argues for extending the uses of information as discussed in (Davis and Olson 1985) and "generalising" the organization model implicit in the book to an organism model. As such the proposal is not radical. Critical readers with sociological background may point out that we are smuggling ideas akin to structuralism and functionalism into information systems. On this count we plead guilty. Having done so we wish to add that functionalism and structuralism have certain attractive powers. While we must not take them to be a kind of all-powerful general theory, we should not shun from using them where appropriate. We invite the IS community to push their application to their full splendour, but not beyond. No theory can explain all phenomena in any discipline. Not the germ theory, not the theory of evolution, not the Newton's law of gravitation. This being the nature of all theories, let us make good use of them.

Section 3 wants to put across the idea of using information to promote learning. To back up its case, it refers to the library as an IS to promote learning. A problem here is that we restrict ourselves to the case of a learning IS for individuals. The French sociologist, Emile Durkheim, put forward the idea that a group (of individuals) was not a multiple of individuals,
with similar characteristics, perhaps, magnified. A group needs to be studied differently, to be described by different concepts and so on. We do subscribe to Durkheim's idea and feel that the use of information for organizational learning is quite different from its use of individual learning. We do not wish to hide behind the common excuse that it is beyond the scope of the paper to discuss information for organizational learning. Honestly, we do not have the time to do so, and the theme forms the subject of a PhD research currently being conducted. We welcome correspondence from our readers on this topic and thank them beforehand on behalf of the PhD candidate.

Section 4 hopes to draw the attention of the IS community to the most powerful and at the same time the most dangerous usage of information. The mass media is an example of IS that operates at the level of influencing the thinking process of people. Given the role of our thoughts in controlling our actions, the implications are quite obvious. Skilful politicians are too aware of this fact and many of them have mis-used it. That may be why information in politics has become a by-word for propaganda, and it is associated with indoctrination. It is the moral and ethical responsibility of the IS community to do further research in this area and influence the use of IS so that we can either eliminate any misuse or reduce it to the minimum.

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