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# Towards a Theory of Management Information

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TOWARDS A THEORY OF MANAGEMENT INFORMATION

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ABSTRACT

This paper indicates that the *radix malorum* of MIS failure may lie in a prevailing and radical misconception of the true nature and purpose of management information and management information systems. Management information (as defined in this paper) surpasses its current definition of being operational data processed and filtered (by the MIS) to support management in the making of effective decisions. Management information is defined as hermeneutic understanding that emerges through meaningful hermeneutic dialogue (in-the-world) between the manager (or management system) and the organization (and its environment), as essential part of the variety transaction, in order to effect purposeful change and achieve variety superiority. In conclusion it can be said that management information cannot be thought of as some objective entity that exists independently of the manager; it is the very essence of the management process. It is the actualization of management-in-the-world.

INTRODUCTION

There is a relatively high degree of consensus in managerial and academic circles about the fact that management information systems have not lived up to the high expectations held in the late seventies and early eighties. Why have these systems not performed as expected? Were the expectations ill-founded? Did IS professionals not deliver? This paper indicates that the *radix malorum* may lie in a prevailing and radical misconception of the true nature and purpose of management information and the strong bias towards technology driven management information systems.

A complete break from the 'established' concepts of management information is proposed, by a process which uses new paradigms or perspectives to investigate the relevant concepts. The concepts explored are the concepts of information, management, and the manager. The selected paradigms are largely derived from disciplines 'outside' the current and traditional IS field of study. The purpose of the paper is to expose the new, and the essential facets of these concepts. The logical structure of the paper is indicated in Figure 1.

INFORMATION

Traditionally information has (at least in MIS circles) been seen as "processed data that is of some real or perceived value to the receiver thereof" (Senn 1982; Davis 1985; Ahituv & Neumann 1990). One of the aspects mentioned (only in passing) by the authors on information systems, is the concept of meaning. Boland (1987) argues that the 'fuzzy' nature of this phenomenon has created the paradox that although most information system researchers know the importance of this concept, it is being consistently sidestepped and "surrogated for the 'structured data' option". Thus the first concepts that this paper will endeavour to grasp are the concepts of meaning and understanding (and as such also information).

The paradigm used to explore the concept of meaning (information) is hermeneutics (as shown in figure 1). Hermeneutics is the 'science' or 'art' of understanding. Information can be seen as the achievement of hermeneutic understanding. Hermeneutic understanding is not a removed intellectual or cognitive type of understanding, it is rooted in the here and now, based on lived experience (*Erlebnis*)<sup>1</sup>, and comes into being by means

<sup>1</sup> The principle of *Erlebnis* (lived experience) "contains the infinitely important element that in order to accept a content as true, the man himself must be present or, more precisely, he must find the content in unity and combined with the certainty of himself" (Hegel in Gadamer 1975).

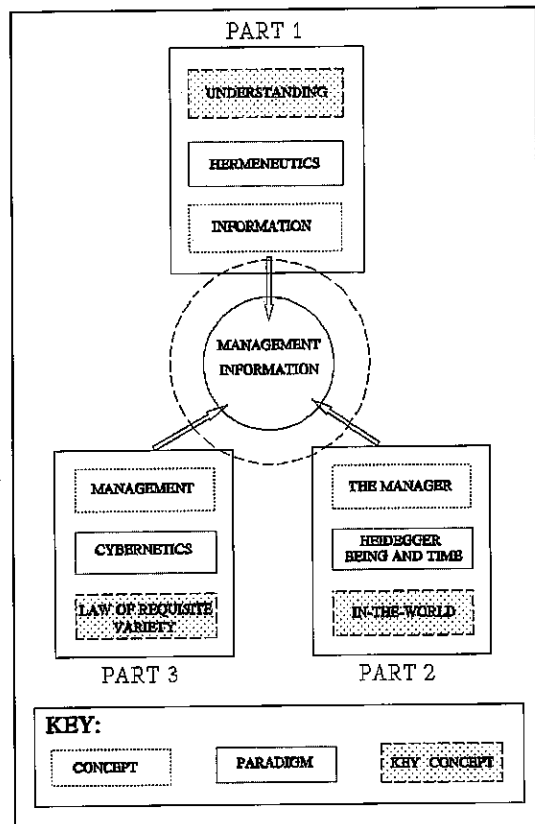


Figure 1: Structure of the Paper

of the process of appropriation (Hoy 1978).

Appropriation is the actualization of meaning personal to someone, it "brings together", "equalises" and renders "contemporary", thus making one's own that which was initially alien (Ricoeur 1979). Information could thus "part of a general 'sense-making' process and be found in a distinctive way a person has come to understand the world" (Boland 1987). Understanding (and thus information) "must be conceived as part of the process of coming into being of meaning, in which the significance of all statements (data) is formed and made complete" (Gadamer 1975).

The tacit process that realizes and drives the appropriation process is the hermeneutic circle. The concept of the hermeneutic circle asserts that the part is determined by the whole and the whole by the part. The hermeneutic circle starts in a heuristic manner. The interpreter uses his 'fore-understanding' and prejudices<sup>2</sup> to construe the initial meaning from the text (or data). He then relates this meaning to his current situation, tradition or context. He now possesses a new understanding of his context, this new understanding is projected back onto the text (or data) which opens up new meanings to be projected back to the context. This

<sup>2</sup> The word prejudice must not be seen in a negative sense. It is used merely to describe the "first stab" or initial understanding or interpretation that the interpreter must necessarily make due to a lack of sufficient context or dialogue. This "first stab" understanding or prejudice will, however, become negative if the interpreter do not continually open himself to the potentiality of new understanding that may emerge.

movement to and fro between text (or the part) and context (or the whole) creates possibilities for understanding, but only if the interpreter persists and continually opens himself to the text. The appropriation process via the hermeneutic circle can be viewed as in Figure 2. The hermeneutic circle is, in a sense, the evolutionary process of coming into being of understanding. It starts with something known and evolves to something new

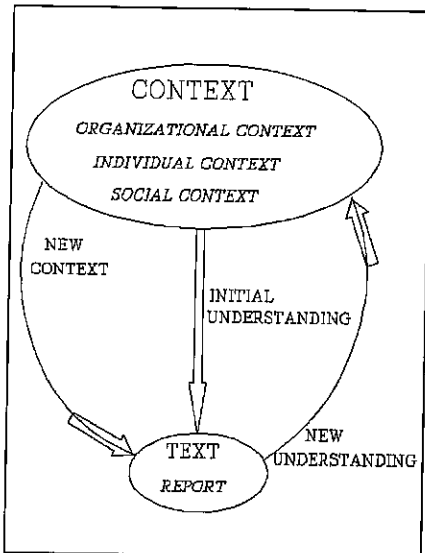


Figure 2: Appropriation via the Hermeneutic Circle

(understanding). The hermeneutic circle highlights the contextual and perspectival nature of the appropriation or understanding process (and as such of information). The iterative and contextual nature of the hermeneutic circle places very definite demands on the appropriation process, even to such a degree that one would expect the appropriation process, by default, to fail rather than to succeed.

Thus appropriation is essentially the 'process' that 'converts' data into information. Appropriation is the bridge between the alien and the known, the essence of interpretation and thus of true understanding. For appropriation to succeed the following conditions must exist:

a. **The Overlap Principle:** One can only understand in terms of what one already knows<sup>3</sup>. If there were no overlap with current understanding, one would not be able to appropriate the data. On the other hand, if the data overlaps completely with one's current understanding, then there is no purpose (and thus no motivation) to appropriate the data (Givon 1989).

b. **Lived Experience (Erlebnis or Life-context):** As Gadamer (1975) has shown, understanding can only be based on *Erlebnis* and nothing else. If the receiver of the data does not have lived experience of the domain in which the data was generated, he will not be able to hermeneutically understand the data.

c. **Hermeneutic Circle:** Understanding emerges in and through the hermeneutic circle. For the hermeneutic circle to succeed, the interpreter must:

(i) understand the context or larger frame that this data emerges from. The more limited the understanding of this context, the more limited the possibility of understanding. This requirement underpins the importance of continual and comprehensive organizational communication. People are often required to understand without having the 'larger picture'. It is clear from the above that this requirement is unreasonable;

(ii) have the ability to relate the text (data) to the context, or the part to the whole. This is an ability that is learnt (not taught) through experience. It is an aspect of *phronesis* (practical wisdom, see (e) below);

(iii) display openness to the text (to be discussed below).

d. **Openness to Text:** Openness to the text is a key condition. He who does not want to understand will not understand. Openness implies the following:

(i) commitment to the process of interpretation. Understanding changes. In order to understand, one must be prepared to accept the possibility of sacrificing current conceptions. This calls for commitment. This is often one of the major stumbling blocks in the process of understanding. The current western culture of individualism makes this requirement more pertinent than ever.

(ii) a willingness to continually 'listen' or continually open oneself to the text, i.e., not to jump prematurely to conclusions and thus close oneself to the possibilities of understanding. It is often said that listening is the essence of good communication. Misunderstanding is always the result of premature closure or termination of the hermeneutic circle.

(iii) being aware of, and continually questioning one's prejudices and 'fore-understanding', but also using them to facilitate understanding without being dogmatic about them.

These requirements for hermeneutic understanding are probably the most difficult of all the requirements, mostly because of the self-centered nature of human beings.

e. **Practical wisdom (Phronesis):** The ability to separate the essential from the non-essential. The ability to translate the universal to the particular. These abilities are learned through experience and cannot be taught.

f. **Effective history:** To be aware of the historical context of the data. To use the historical context in the hermeneutic circle to gain understanding. Data can never be removed from its historical tradition. The same basic 'facts' can have different meanings, or can be understood differently in different historical traditions. Each person, community, or organization has its own historical traditions. The prevailing tradition must continually be made explicit through organizational communication. Effective history is the learning process that must be part of the organization's continual renewal.

g. **Common lexicon:** Lastly, to be able to syntactically and semantically, interpret the data, there must be a common lexicon. The common lexicon evolves as persons or parties engage in dialogue as part of the total organizational communication. This implies that there must be a certain degree of lexical agreement between the person who encodes the data and the person who wishes to understand the data. It may be helpful to make this lexicon explicit (or formal in the manner that the legal profession has done it) and maintain it as part of the historical tradition of the organization.

It is interesting to note that only two of the conditions for appropriation, i.e., (a) and (g) above, are indirectly related to data presentation. The other conditions are directly related to the receiver and his abilities.

The understanding (or information) achieved by means of appropriation becomes the basis for insight and sound judgement. Without insight and sound judgement, decisions and actions in or about the situation or system at hand will be *ad hoc*.

<sup>3</sup> It is not implied that if one 'knows' nothing one cannot understand anything. The possibility of *a priori* knowledge and understanding is not discounted. This principle only suggests that there needs to be some overlap in order to facilitate understanding.

## THE MANAGER

Heidegger's concepts of thrownness and of being-in-the-world will be used to investigate the manager and the nature of his "world" (Heidegger 1962; Gelven 1970). The manager is a being-in-the-world, not a removed entity or object, but an inseparable part-of-the-world. To be part-of-the-world is to be part of the unfolding events of the world, be they good or bad, desired or undesired. The being-part-of-the-world nature of the manager results in his experiencing himself as "thrown-into-the-world", making a great deal of his world unalterable. He must achieve success in spite of the world, the situation, or the circumstances. Any attempt to separate the manager from the world would be to no avail. The manager will always be:

- (i) within the organizational politics and power structures;
- (ii) within the organizational culture and tradition;
- (iii) within formal and informal groups, subject to their demands, pressures, cultures and traditions;
- (iv) within personal and interpersonal conflicts;
- (v) within personal and organizational limitations,

This is the world from which he cannot escape (not even temporarily be 'removed' from.) It is in this world that he needs to receive and use "information."

Mintzberg (1980) has shown that the thrown-into-the-world nature of the manager's existence makes his daily world complex, fragmented, discontinuous and often even superficial.

The manager is not, and cannot be a reflective being, removed from the situation, who can 'objectively' place reality before him, weigh every possibility and make 'objective' and 'rational' decisions. Such a manager is a myth, a mirage of perfection. Managerial decisions (and actions) are not so much a predicament of recognizing (and acting on) 'rationally right' or 'rationally wrong', but rather a dilemma of what is 'more desirable' or 'less desirable' in a given set of circumstances (Drucker 1967).

## MANAGEMENT

Management is a seemingly simple but actually very elusive concept. Many authors<sup>4</sup> has tried to define management with limited success. Somehow most researchers and management academics have much to say about how to manage but very little about the true essence of the concept of management (Holt 1987; Hellriegel 1989; Robbins 1988; Donnelly 1990). Cybernetics provides a paradigm that enables the researcher to discover the essence of management without getting caught in the specifics (Beer 1985).

The law of requisite variety holds that a system can only 'control' another system if it is at least as 'variety-rich' as the system it wishes to control (Ashby 1957). Thus, for any condition, state or measure that the system generates, the 'control' system must be able to generate a counter-condition, counter-state or counter-measure as indicated in Figure 3. The law of requisite variety is the basis for understanding the interaction between systems in the organization, and the interaction between the organization and its environment. The manager must have sufficient variety to 'control' the organization (operational management), but the organization must have sufficient variety to 'control' its environment (strategic management). The operational and strategic management process must succeed if the organization wishes to survive in the long-term. The following important implications come to the fore when using the law of requisite variety as a means to understand the issues involved in the managing of an organization:

a. In the battle for survival all systems attempt to control their environments. In order to control their environments, they must increase their variety. As the variety of systems increases, the complexity of all systems increases. Thus all systems are in an inescapable spiral of ever-increasing complexity.

b. The manager must continually find ways to achieve variety superiority. If the organization's variety increases, this would necessitate more variety abundant (and more complex) control systems so as to maintain management control<sup>4</sup>. The manager is, in a sense, caught between the desire to limit the variety of the organization (so as to control it) and the possibility of limiting the variety of the organization to the degree that the organization cannot control its environment. The

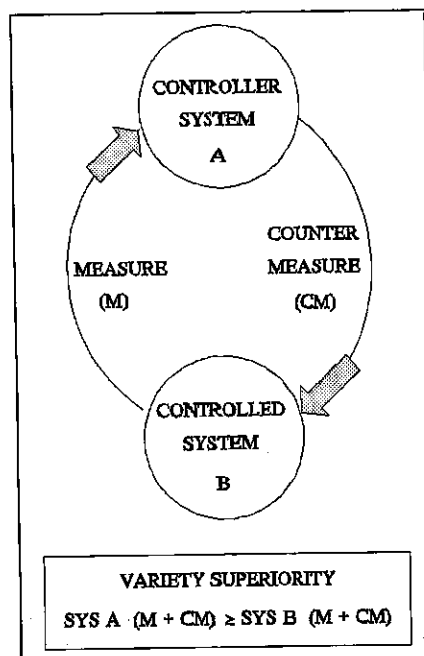


Figure 3: The Law of Requisite Variety

real art and science of management is to be able to balance the requirement for management control with the need for the organization to control<sup>5</sup> its environment. It is clear from the discussion that the very understandable desire of some managers for simple control systems and simple 'rule of thumb' conceptual or abstract models of extremely complex systems is ill-founded.

### Key Point

It is vital to realise the importance of the word 'requisite' in the law of requisite variety. Too much variety can be as detrimental as too little variety. Thus increasing the variety to a level beyond that required will increase the complexity without getting the reward of increased effectiveness, i.e., increased ability to control the environment. This non-required complexity will only decrease the efficiency of the system. Thus it may be that some systems need to decrease their variety in a given situation and increase it in another. It is therefore important to know or to be able to determine the appropriate level of variety required.

The variety transaction<sup>6</sup> is an important concept that emerges in the application of the law of requisite variety in a social system such as the

<sup>4</sup> Management control is when the management system is more variety abundant than the organization. Organizational control is when the organization is more variety abundant than its environment.

<sup>5</sup> The organization must control its environment in order to survive. This control is, in fact, more complex than the management control of the organization, as the organization can only influence its environment and not control it directly.

<sup>6</sup> The concept transaction implies a reciprocal exchange between two parties or systems.

organization (populated by purposeful<sup>7</sup> systems). In essence variety can only come into existence if it is transacted (transferred or communicated). Variety that is not transacted can be compared to plans in drawers, ideas for new products in minds or theoretical concepts in books: it is of very limited use. The variety transaction, which is fundamentally a linguistic exchange of hermeneutic understanding (or information), becomes the rudimentary vehicle for the application or realization of the law of requisite variety. Based on the law of requisite variety and the variety transaction, management emerges as the language based, communicative act of bringing about purposeful change, thus placing the information concept (as defined above) right in the centre of the management concept. If one separates these concepts, one is left with a useless abstraction.

### MANAGEMENT INFORMATION

Bearing in mind the concepts of information, management, and the manager as set out above, one can define a new, richer concept of management information. Management information (as will be defined) surpasses its current definition of "being operational data processed and filtered (by the MIS) to support management in the making of effective decisions" (Gorry and Scott Morton 1972; Davis and Olson 1985; Schultheis and Summer 1989). This paper argues that a reconceptualization of the concept of management information is required as the previous conception has exhausted its benefits. A more complex and varied concept should provide many insights overlooked by the previously limited definitions or perspectives.

Based on the concepts of management, the manager and information as outlined above management information can now be defined as follows:

*Management information is the hermeneutic understanding that emerges through meaningful hermeneutic dialogue<sup>8</sup> (in-the-world) between the manager (or management system) and the organization (and its environment), as essential part of the variety transaction, so as to effect purposeful change and achieve variety superiority.*

Management information is hermeneutic understanding (or information) that emerges from meaningful hermeneutic dialogue. This dialogue does not occur in some isolated vacuum, it happens in-the-world of the manager. Management information is part of the manager's life-context. To attempt to isolate it in any way from the entire organizational context of communication, politics, culture, or any other social process would be to deny its in-the-world character. The purpose of management information is to effect purposeful change. As systems engage in meaningful hermeneutic dialogue, reciprocal understanding and insight become the basis of their interaction. Through this understanding and insight, variety can be transacted and variety superiority can be achieved, securing long-term survival.

The characteristics of management information can thus be expressed as follows:

- a. Management information is hermeneutic understanding. If the data that the manager receives (either by means of direct dialogue, or by means of indirect dialogue via an information system) cannot be appropriated and understood, information has not 'happened'.
- b. Management information must lead to insight. Insight is what the manager needs, insight into the management situation, insight into the

behaviour of the organization, insight that will lead to good judgements. Without insight and good judgements all decision-making will be *ad hoc*.

- c. Management information is contextual, historical and perspectival. Like information, management information cannot be severed from its context. It must be interpreted and understood within its culture, tradition and communicative context.
- d. Management information exists in-the-manager's-world. Management information is a ready-at-hand tool designed to achieve understanding and insight. Management information is part of the fragmented, erratic world of the manager. The manager in his "throwness" must communicate and understand his world. Management information does not come in neat packets of understanding that wait for the manager at predefined points. Management information pops up in and throughout the world, often unexpected, at inappropriate times and in less than ideal forms.
- e. Management information is never complete. Managers in the management situation are constantly appropriating and reappropriating the data they are confronted with. They are in, and stay in the hermeneutic circle, always interpreting, always struggling for new understanding or more complete understanding.

f. Management information is part of the total organizational dialogue. Management information forms linguistic chains generated by the variety transactions in the organisation. If these linguistic chains persistently fail, the organization will eventually collapse into chaos, with variety proliferating in all systems.

If this is management information what then is a management information system? A management information system can be defined as follows:

*A management information system is a system that supports or directly realises hermeneutic dialogue between the manager and the organization in-the-world.*

For greater insight into the definition, the following aspects must be emphasised:

- a. The management information system is a system. Thus it is a set of elements that are interrelated or work together to achieve the objective of hermeneutic understanding.
- b. The management information system supports or directly realises hermeneutic dialogue. It is important to realise that a computerized 'information' system can support hermeneutic dialogue. It can, however, never completely realise it. Thus a computerised 'information' system in itself can never represent a management information system.
- c. A management information system is, and functions, in-the-world. It can never be isolated functionally or conceptually from the context of the day-to-day organizational world.

### CONCLUSIONS AND IMPLICATIONS

Before one makes any detailed conclusions about management information, one should pause to summarise the meta-conclusion emerging from the paper as a whole. This conclusion can be expressed as follows:

Information, and in particular management information, is the essence of management. Without appropriation by the manager by means of the process of hermeneutic dialogue, there can be no variety transaction, as variety can only be transacted if it is understood. If variety is not transacted, variety is not created. Without variety creation, an organization

<sup>7</sup> Purposeful systems are systems that can select ends and means and as such display will.

<sup>8</sup> Hermeneutic dialogue is the reciprocal exchange of hermeneutic understanding.

is not able to control (via the law of requisite variety) its environment<sup>9</sup>. A system that does not control its environment cannot survive in the long-term, i.e., management has failed. Thus, in a sense, management is information and information is management. It is therefore totally incorrect to think of management information as some objective entity that exists independently of the manager. Management information is not merely an 'object' that the manager can decide to use, or not to use, when and as needed, to make decisions. It is the very essence of the management process.

Having said this, one can focus on some detailed conclusions concerning information, the manager and management information.

#### Conclusions and Implications Concerning Information

Information is the understanding that a person achieves by means of the process of hermeneutic interpretation or appropriation.

##### Implication:

- People, not machines, create information.
- Understanding is the goal and purpose of information.
- With understanding and insight, which results from understanding, people can meaningfully affect/change their world.

Information is not an entity that exists independently of a human being. Information is the interpretation, and thus the meaning, that a person attaches to a text or to data.

##### Implication:

- Information cannot be transferred. This implies that a person or a computer cannot provide another person with information. They can, at most, supply the person with data. The receiver must still appropriate the data before it becomes information, and the appropriation process remains subject to the conditions or requirements of appropriation which make it successful.
- Due to the nature of the appropriation process, information can never be absolute; it will always be relative.

Information is created by the process of interpretation using the hermeneutic circle or, specifically, hermeneutic dialogue. By means of hermeneutic dialogue, the person or manager appropriates the data and this data become meaningful. The appropriation process happens in-the-world and is based on *Erlebnis*.

##### Implication:

- The person doing the appropriation is the key success factor in the appropriation process.

An information system is a system that supports or directly realises the appropriation process. The appropriation process can be supported from outside the interpreter but only the interpreter can, in the final analysis, appropriate the data.

##### Implications:

- A machine (computer) cannot, in any sense of the word, be an information system. It can merely support the appropriation process.
- It is clear that the traditional emphasis on computer output as the criterion of MIS success must lead to failure. The success of the MIS is determined by the degree to which the MIS will facilitate dialogue or the degree to which the person interacts with the

system and not the degree to which the system interacts with the person<sup>10</sup>.

#### Conclusions and Implications Concerning the Manager

The manager is thrown into-the-world. He must achieve management in spite of his thrownness, and by means of his thrownness. He is never able to separate himself from the world. Anything he achieves, he achieves in-and through-the-world. His days are fragmented, erratic and complex. He is continually negotiating, judging, deciding and acting in a milieu that is not ideal, that is more often than not chaotic. In spite of this, the manager must make sound judgements and take effective decisions. In order to make sound judgements and decisions, the manager must continually attempt to interpret his world to gain understanding and insight.

##### Implication:

- The manager is not a reflective being, removed from the situation, who can objectively place reality before him and weigh every possibility and make objective and rational decisions.
- The design of any MIS must take due cognizance of the fact that the manager functions in-the-world. The MIS must support him in his thrownness and not add to his thrownness.

#### Conclusions and Implications Concerning Management

Management is the achievement of variety superiority. Management is successful only if the organization achieves long-term survival. Variety superiority is achieved via the variety transaction. The organization must not only be able to generate and innovate variety. The organization must also be able to communicate and constitute variety by means of the variety transaction.

#### Conclusions and Implications Concerning Management Information

It is important to note that management information is not different, in its essential characteristics, from information as described above. The difference only emerges in the purpose and context of its application.

Management information is the hermeneutic understanding that management achieves by means of hermeneutic dialogue with its environment. Hermeneutic dialogue consists of linguistic interactions within variety transactions. The purpose of management information is to constitute variety or, to state it differently, to effect change. Management information, like information, is contextual, historical and perspectival. It cannot be transferred, it must be gained by means of hermeneutic dialogue. Hermeneutic dialogue is based on the principle of dialogue and of appropriation. Managers (and not machines) create management information.

##### Implication:

- All implications as set out above for information, etc.
- The fantasy of a manager managing from a control room or command post surrounded by displays summarizing, plotting and graphing every aspect of the business is clearly misplaced. As Peter Drucker (1967) explains "One needs organized information for feedback. One needs reports and figures. But unless one builds one's feedback around direct exposure to reality - unless one disciplines oneself to go out and look - one condemns oneself to a sterile dogmatism and with it to ineffectiveness".

<sup>9</sup> Environment here implies the task environment, i.e., customers, suppliers, competitors etc.

<sup>10</sup> There is a subtle but very important difference here. The principal responsibility to realise information lies with the person and not with the system.

### Implications for Managers

The implications below may, on the surface, look 'harmless'. Their full meaning, however, implies a radical new approach to management information and its use. One can, generally speaking, conclude that the implications indicate that the responsibility for success in the management information process lies squarely on the shoulders of the manager.

a. *Management success depends on information.* This is indicated by the following:

(i) All management processes (operational and strategic) are interdependent and are based on understanding. This paper has shown that the success of the whole management process relies heavily on reciprocal understanding between top management and operational management.

(ii) The variety transaction is dependent on understanding. The success of the variety transaction, and thus the success of variety creation (or, to put it into simpler terms, the ability to get something done) depends on understanding. Without understanding, requisite variety cannot be transacted. Without requisite variety, chaos will increase and management success will decrease.

(iii) Learning is dependent on understanding. One can only learn if one understands. Without understanding, actions are *ad hoc*. *Ad hoc* actions do not improve the efficiency of the system in pursuing its objectives. Thus *ad hoc* actions do not lead to learning<sup>11</sup>. Without individual learning, the system as a whole will become *ad hoc* in its actions.

b. *Information depends on the manager.* Information is critical for management but the manager is critical for information as:

(i) It is the manager who must understand. Information is, by definition, understanding. If the manager does not understand, then information has not 'happened', no matter how much processing is done by a computer or any other person, or how much data is provided to the manager.

(ii) The manager must appropriate the data. The manager must ensure that the data is 'converted' into information by the process of appropriation. The conditions of appropriation must be met. Some of the conditions are, however, not under the direct control of the manager. A combined effort by the manager, the organization and the information systems department is needed to ensure that the conditions for appropriation are created.

(iii) The manager must interpret the data. The manager must, through the use of practical wisdom, create insight into the situation. This is not something that the manager can be taught. He must learn this process through experience. The manager must, however, be aware of the hermeneutic circle and must consciously use it to gain the required insight.

c. *Appropriation will be expected to fail by default.* Information is not a haphazard process that just 'happens'. There are many reasons why the process of understanding would fail rather than succeed.

(i) The appropriation process depends on the manager. The appropriation process depends on commitment, openness to the text and many other factors that are not the type of factors that one would expect to be present in the natural everyday type of management situation.

(ii) The manager is in-the-world. The manager is thrown-into-the-world. He is not a removed, distant, rational being that can consciously control the appropriation process. Instead, the manager is situated in a fragmented, frequently interrupted, even superficial judgement situation. In this type of situation, in order for appropriation to take place, a manager needs commitment and openness on a grand scale.

d. *Management information does not consist of tables, graphs and statistics.* Management information cannot be created by a computer. It consists of hermeneutic understanding that emerges from hermeneutic dialogue.

(i) Management information is not clever graphs, tables and statistics. Management information is understanding based on experience. Without hermeneutic dialogue, true understanding is not possible.

(ii) Management information does not primarily support decisions. Decisions can be taken by the computer without appropriation (such decisions are called structured or programmed decisions.) The computer only requires a set of facts (data), a set of rules and a fixed decision context for it to make decisions. Management information (understanding) supports judgement. In situations where there are no fixed rules, but only broad principles, and where the decision context is continually changing, the need for judgement arises. As Peter Drucker (1967) explains "a decision [of managers] is a judgement. It is a choice between alternatives. It is rarely a choice between wrong or right. It is at best a choice between 'almost right' and 'probably wrong' - but much more often a choice between two courses of action neither of which is provably more right than the other". Sound judgements, that make the 'best' choices, can only be based on hermeneutic understanding and on nothing else.

It is clear that managers must radically change their concept of management information or face the possibility of forever 'drowning in data' and never achieving hermeneutic understanding and thus information.

### CLOSING REMARKS

The most important fact to emerge from this paper is that there needs to be a radical reorientation in the current view of the concept of management information. Management information is much more, and much less, than is currently accepted. Management information is more in the sense that it is the essence of management and organization, less, in the sense that it is not a complicated set of sophisticated computing machinery.

For scientific dialogue to achieve its goal, there needs to be claims and counter claims, theses and antitheses. This paper makes its claims, proposes its theses, not as *fait accompli* but as the opening statements of a dialogue that may lead into the heart of a deep and lasting understanding of the true nature and purpose of management information.

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<sup>11</sup> To learn is to increase one's efficiency in the pursuit of a goal under unchanged conditions (Ackoff 1971).

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