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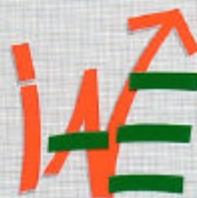
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Accounting

*Information
Semiosis*

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Accounting Information Semiosis

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Abstract

Information is relative to its contemplator. A contemplator does not exist in a vacuum but a magical world of their own disposition. Their magical world is realised through their faculty of mind that makes sense of their own existence. Their sense of existence is atypical realisation. Thus, there is no objective reality that can be realised by others but rather distinctive inter subjective interpretations of inherent realisations. This process of inter-subjective inquiry occurs in a communication continuum. In such a continuum, language or systems of signs are used by interpreters to acquire, represent and manipulate information. Our concern with a communication continuum are the problems of signification which include: reference, inference and choice in the social discourse of accountancy. In this paper, we ponder an philosophical conviction that is based upon the way people interpret and use signs -semiotics- in contemplating such a continuum of signs. The aim of which is two folds: (a) can semiotics provide critical theory-postmodernism with the means of explicit and critical reflection on the barriers to perfect communication which is a step in the right direction of human emancipation, and (b) to explore the potential of semiotics for intelligent accountancy based applications.

KEYWORDS: Communication, critical theory, emancipation, philosophy, postmodernism, semiotics

I. Introduction

Any social phenomenon or activity can be thought of as a social construction by human actors participating in that phenomenon or activity and our knowledge of reality is that of what has been constructed by these Actors. Thus there is no objective reality which can be discovered by researchers and replicated by others. Walsham (1993) argues that theories concerning reality are ways of making sense of the world and shared meanings are a form of inter subjectivity rather than objectivity. Interpretivism is thus an epistemological position, concerned with approaches to the understanding of reality and asserting that all such knowledge is necessarily a social construction and thus subjective. Accountancy and Computer Audit as a social discourse is no exception.

In the Interpretive tradition, there are no correct or incorrect theories but there are interesting and less interesting ways to view the world. You might well ask 'interesting to whom?'. The answer would be that these theories or ways are interesting to their interpreters. However, although the use by an individual interpreter of a particular theoretical approach derives no doubt from their own personal experience and insight, the testing of the value of these insights to others can be carried out by exposing the approach through verbal and written discourse to enable broader judgments of value to be made.

In this paper, interpretive approaches have been chosen to guide us in understanding the social discourse of computer audit judgments that are characterised by cultural diversity of their participants. In considering any computer audit assignment, there has to be two parties at the outset: auditors and the client's computer based information system (CBIS) - including hardware, software, databases

and people. We would like to adopt the view that a client's system weakness or failure can be best thought of as a breakdown in communication between two parties within the client's CBIS: client's employees and the accounting information system. This breakdown demonstrates the inter subjective usage of language in the social discourse of the client's computer based information system. Auditors examine the breakdown and try to resolve the inter subjectivity of the breakdown using their own 'objective' (so called) way of assessment.

The interface between humans and machines can be described as the socio-technical interface where humans and machines communicate. This socio-technical interface presents us with a modern formulation of duality or the mind-body problem. In drawing upon philosophy and its wealth of experience in examining the mind-body problem, we might be able to understand the socio-technical interface and its interrelated communication problems.

Communication consists of elements which we can analyse in terms of a continuum from context through meaning, syntax and code. An act of communication is successful when the intentions of the sender are understood -in terms of the different levels of such a continuum- by the receiver. When humans try to make sense of their own reality or simply of what exists, they are merely describing their own interpretation of what they perceive -in terms of the different levels of the continuum- to exist. Humans use their own way of communication to describe themselves and to realise their own world. They use language -systems of signs- to represent what they perceive to exist and communicate it with one another.

"Information" is one of the most widely used terms in almost every field and every context. It has come to mean all sorts of things, but it is often used in a careless or imprecise manner. Information offers a basis for studying organisations; widespread human communication (signification) problems and the role of computers in mechanical manipulation of signs from a common perspective.

Semiotics or the theory of signs is one established area of study and it can provide us with a firm foundation on which to build. It is particularly useful for it provides a common framework to humans inter subjective interpretation of both human and computer based signs.

In our paper, we have attempted to explain the socio-technical interface duality using a semiotic framework. We have provided an interpretation of these socio-technical inscriptions as follows: Firstly, we discuss some of the existing interpretive literature. Secondly, we have outlined what is the socio-technical interface. Thirdly, our analysis progresses into an interpretation of what we see as the socio-technical inscriptions. Fourthly, a proposal of a semiotic approach to computer audit. And finally, we sum up our analytical interpretation with our conclusions and what we perceive to be a stepping stone to further research in that area.

A World View

‘Being is, non-being is not’

Since the time of Parmenides and reasoning of what exists, solely rests upon what humans perceive to exist. Reason is a way of seeing and a way of not-seeing. Reason and any theoretical perspective blinds us to other perspectives at its moment of application. A second, and more subtle, criticism of reasoning is that in any real human activity, particularly that involving others, we take action without the conscious use of theory, and certainly the action is conditioned by more than any singular theory. So the argument in favour of one particular way of seeing or one particular theoretical approach to studying information is irrelevant to this paper.

As long as social discourses are about human beings and computer audit is a social discourse then, theory about human condition can be considered for our outlook. This implies that the whole of previous theory about human life, and in particular philosophical thought, is relevant to modern-day computer audit. However, it is unrealistic to expect any individual to have comprehensive access to this historical legacy, but we should not mislead into divorcing IS research from earlier work and ideas.

In the first section of our discussion, we shall overview some of the interpretive research that will provide a perspective to why we want to follow such an approach in our paper.

II.A. An Overview Of Interpretation

Some may ponder why ‘interpretation’ has been chosen as the focal level of our analysis and paper? Is interpretation sufficient to provide enough scope for what we are trying to achieve? But, what are we trying to achieve in the first place?

In this paper, we draw upon computer auditing as an area of practical knowledge that lends itself to several disciplines: philosophy, accounting, auditing, information systems and so on. We think that in our role as interdisciplinary practitioners and researchers, we should draw upon knowledge and experience from other related disciplines to provide us with an insightful understanding of ours. We think that our main concern within computer audit is *to make sense of what we are dealing with*, that is evaluating the human-computer interaction.

You may ask: “what do you mean by *to make sense of what we are dealing with*’?”. In attempting to answer this question, we have to focus our attention on sense making as a cognitive process of human action that is the realisation of interaction.

The realisation of interaction can be expounded through bringing out the meaning of the representation or performance of such interaction. This process of bringing out the meaning of such interaction is a mere interpretation of action. Hence, our use of the concept of interpretation is from the perspective of bringing out meaning of interactive action something like bringing out meaning of an artistic representation or performance.

So where does this lead us with respect to a theoretical framework on information with a computer audit focus? Information in a computer audit context have holographic properties (that cannot be separated from their 'authors'), in that their development and use can be considered to be a relevant domain for all earlier thought.

II.B. Critical Theory

Perhaps one of the most influential philosophers of our modern times is Habermas. His writings are a development from the critical social theory of the so called Frankfurt School in the 1930s. This school was opposed to the dominance of positivism which, it was argued, eclipses the philosopher, namely the subject who reflexively investigates the grounds of his or her own claims to knowledge. Part of Habermas' work is a theory of the link between knowledge and human interests, arguing that positivism is linked to the desire for technical control, hermeneutics and related interpretive approaches to a desire of understanding, but critical theory to a desire for emancipation. The pursuit of the goal of emancipation leads to an attempt to create circumstances in which communicative action takes place aimed at achieving mutual understanding. This is mediated through language where undistorted communication can take place. This involves 'not only the rational attainment of consensus but also complete mutual understanding by participants and recognition of the authentic right of each to participate in the dialogue as an autonomous and equal partner' (Giddens, 1977).

But, is it possible to have such autonomy and equal partnership in a computer audit dialogue where a partner is negotiating with a prospective client which systems are there to be audited and a contract for his or her firm that may be gained or lost is in sight!

II.C. Post-modernism

After postmodern literature, postmodern architecture, the postmodern family, postmodern pornography and the postmodern monkey, time has come to introduce a postmodern model of information. Since its first widespread use by American literary critics, the label 'postmodern' has been attached to so many phenomena that it has degenerated to a mere buzzword.

A common position of those writers who were classed under the label of post-modernist is to question the 'modernist' idea of the history of human progress as an upwards curve. On the whole, it seems to us that, these writers are the ones who align their own best efforts with state-building, but in the name of nation-building.

An elaborated philosophical conception of post modernism exists by the French philosopher Jean-Francois Lyotard and the German philosopher Wolfgang Welsch.

II.D. Lyotard's Version of Postmodern Philosophy

In his first book on this topic, '*La Condition Postmoderne*', Lyotard characterises contemporary science and knowledge as pluralistic systems without any central point of reference.

This situation is contrasted with the modern era where science and scientific knowledge has been legitimated by two meta narrations; the progressive emancipation of humans through knowledge and the speculative idea of being able to derive everything from one basic principle and to use this knowledge for realising an ideal world. Having lost these unifying legitimations, postmodern knowledge has

been fragmented into many heterogeneous discourses or language games (as Lyotard calls them, in analogy to Wittgenstein's use of the term).

Each discourse has a body of rules to determine truth and falsity of its sentences. However, due to the heterogeneity of these language games, sentences of one discourse cannot be compared or tested in another one. The diversity between different types of discourse is stressed even more in Lyotard's main book on postmodern philosophy, 'Le Differend' (Lyotard, 1983). Postmodern philosophy in Lyotard's sense is a philosophy of the heterogeneous, a philosophy focussing on the finally irreducibly diverse structure of the world.

II.E. Welsch's Version of Postmodern Philosophy

This conception has been extended by Wolfgang Welsch (1988), who has criticised Lyotard for overstressing the gap between discourses. In everyday practice we have to and are able to find transitions between them. This is only possible if the discourses are clearly differentiated from each other.

We have to know where there are contrasts, oppositions, crossings, overlaps, complementaries, compatibilities, analogies and commonalities. Then we can build bridges and make transitions between them. However, these bridges and transitions are not absolute and eternal constructs. They exist relative to certain domain or to a certain purpose and are temporary in nature. They neither suspend the tension between the discourses and nor do they depend on a general consensus between the participants of the discourses (as Habermas would want to have it).

Welsch has called the ability responsible for this: transversal reason. His conception of transversal reason is in close proximity to Kant's conception of the power of judgement or 'Urteilkraft'. Transversal reason differentiates, finds transitions, and is conscious about history and cultural-temporal relativity of each discourse. It creates multi-

perspective views through multiple encoding and crosses different approaches in hybrid systems allowing for local but never global synthesis.

Hence, while keeping the pluralistic base, the extended conception of postmodern philosophy by Welsch adds differentiation, multi-perspectivity, cross-coding and hybridisation as central elements. These elements are indeed central to our analysis and approach in this paper, but how can we operationalise Welsch's ideas in the context of computer audit?.

II.F. Operationalising Post-modernism

In following Welsch's ideals of postmodernism, we have to find a hybrid approach that encompass multi-perspectivity and cross-coding in its application. When considering an approach, it is fundamental to realise that we are doing so from our own perspective as researchers. Hence, the approach will be constructed with a researcher's role in mind.

Any researcher constructs an imaginary interface with the case(s) or problem under study (or of interest) through which they come to conceptualise their realisation of what: (a) they perceive to be the problem; (b) their inferences of what constitutes the alternatives that are there; (c) the choices they have to make; and (d) the actual action taken.

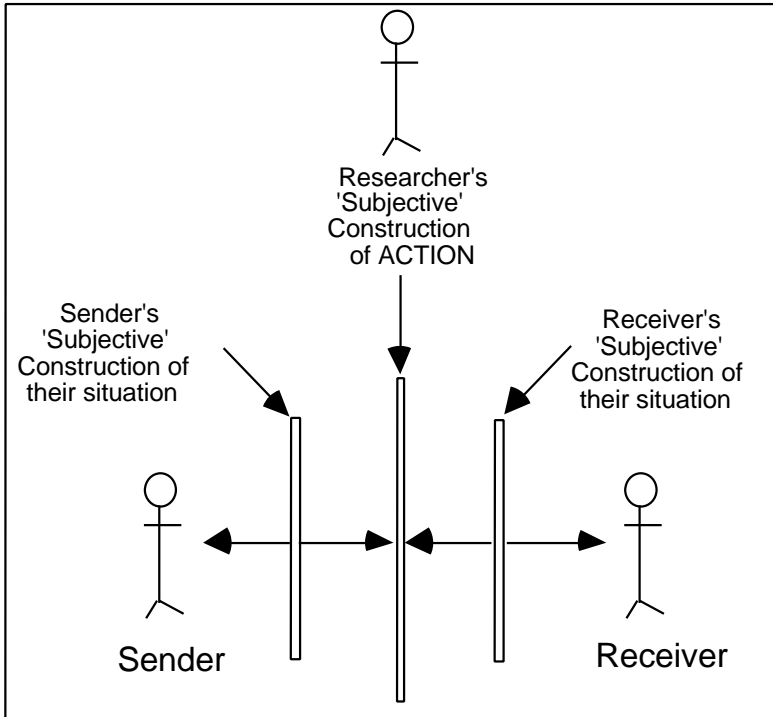


FIGURE 0 - A RESEARCHER'S CONSTRUCTION OF ACTION INTERFACE

This realisation is a subjective construction by the researcher of what they perceive to be taking place in the action or situation. But, what is a situation or an action in the first place?

The Concise Oxford Dictionary (1988) defines an action as “*a process of acting, exertion of energy or influence*”, while it defines a situation as “*set of circumstances, position in which one finds oneself*”. It is to our mind, that an action or a situation does not exist in absence of at least two actors that are acting upon an activity. Some may argue that one can find oneself in a situation with no other humans in sight. Well, within a computer audit context, any situation will have to have two humans in communion with one another or at least one created by a human and the other one is

interfacing with what was created by the other, for example, an auditor reviewing an information system of some sort, where, the information system has been designed by someone else and the review process occurs in between both of them.

We would like to consider or perhaps propose that such an interaction is the focal point of the researcher's reflection (Fig. 0) on the situation or action in mind. This interaction is the central core to the researcher's subjective construction of the interface that represent his/her own conception of the case, problem or action. Both of the sender and the receiver have their own subjective constructions of their own realities or what they perceive to be communicated in between them.

The researcher is left with the task of making sense of what is being communicated or the subjective constructions of reality by both the sender and receiver. The researcher takes the liberty of being the judge of their subjective constructions or may we say their subjective interpretations of reality or action. In the next section, we are going to discuss the different aspects of what we conceive to be the interface.

III. Socio Technical Interfaces

The interface between a human and a computer can be described (Moran, 1981) as: *“that part of a system that the user comes in contact with physically, perceptually or conceptually”*. If we adopt this view for the purpose of this paper, we would like to refer to this interface as the socio-technical interface (Fig.1).

On one side of the interface we are concerned with humans or the social aspect of the interface, and on the other side, our concern is with the total Computer Based Information System (CBIS), including the models and structures, assumptions and values, embedded in the CBIS, rather than just the machine itself

(Hirschheim *et al*, 1989). At this stage, we would like to emphasize that the CBIS is a representation of the human(s) that were involved in designing, building and implementing it. In a sense, someone have constructed their reality and embedded it within the CBIS and auditors are going to examine these constructed realities from their own perspective.

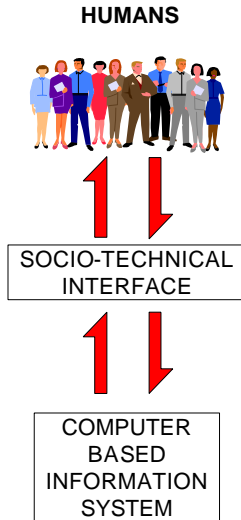


FIGURE 1 - SOCIO-TECHNICAL INTERFACE

In a Computer Audit context, computer auditors should be able to define their own reality, that is what are the different socio-technical interface(s) within the client's system? How many interfaces are there in the client's system? Why should we identify and classify these interfaces according to a certain way?

IV. A General View of Duality

Duality or the mind-body problem has been a major concern of metaphysicians, especially since the rise of modern philosophy in the seventeenth century. On one hand we have the mind which is the mental state of our existence and the body which is the physical state of our existence. The mental state is trying to make sense of our physical state and is trying in some way or another to rationalise the interaction with it. Hence, creating and offering us what we can refer to as the mind-body interface. This interface represents the *perceptual interactions* (in terms of the different levels of the communication continuum) between each of these two interrelated problematic states of our existence.

We think that in a way, the socio-technical interface portrays duality in a modern setting. On the one hand we have the mind or the social aspect of the interface and on the other we have matter or computer technology. Duality (Sprague, 1978) in its broadest sense involves answering the questions, “*What is the fundamental nature of mind and body?*” and “*How are mind and body related?*”

Russell (1967) argues that, what we know about mental and physical events might well lead one to suspect that the most general characteristics of each are different from one another, and yet that they seem to bear some relation to each other, or some influence upon one another.

When something happens in the physical world of the CBIS, this affects the world of the social system, and may change one’s thoughts, wishes, etc.. Similarly, a desire that one may have can alter events in the physical world of the CBIS, as when one decides to change what is being stored inside the CBIS: information or more particularly, afflict an unauthorised change to the events in the physical world of the CBIS i.e., computer abuse.

V. Computer Audit - A Case for Modern Duality

Computer Auditing functions in a way that can be described as a field that *seeks an understanding of socio-technical systems inscriptions*, where humans and computers interface and interact in a human based activity that is being examined by human auditors. A human activity involves more than what can be captured, represented and manipulated by quantitative measures. It involves an exchange of an interest based on an intention through an act of communication.

Duality of the socio-technical interface within a Computer Audit context may involve answering the questions, “*What is the impact of the social system on the technical system?*” and “*What is the impact of the technical system on the social system?*” This can be demonstrated in the following diagram (Fig.2):

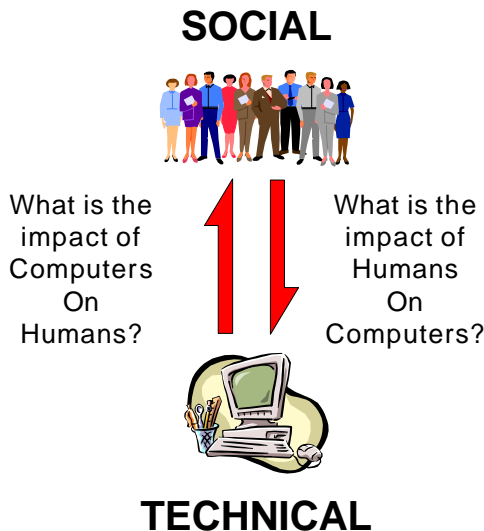


FIGURE 2 - SOCIO-TECHNICAL INTERFACE DUALITY

It is fundamentally important to realise that, *it is the social system that is trying to find a rationale to make sense of the technical system* not the other way round. In other words, the social system should be the focal point of any investigation that would address the interface. Thus, It is from the perspective of the social system that we are questioning and addressing the interface.

Computer auditors study, assess and evaluate computer based information systems (Fig.3). A computer based information system is another form of a socio-technical system, where humans as accountants or accounting clerks inputs and retrieves data to and from the accounting information that is being processed in the computer. So, they are inflicting a change to the physical world of the computer and getting affected by the changes that they have caused in the first place.

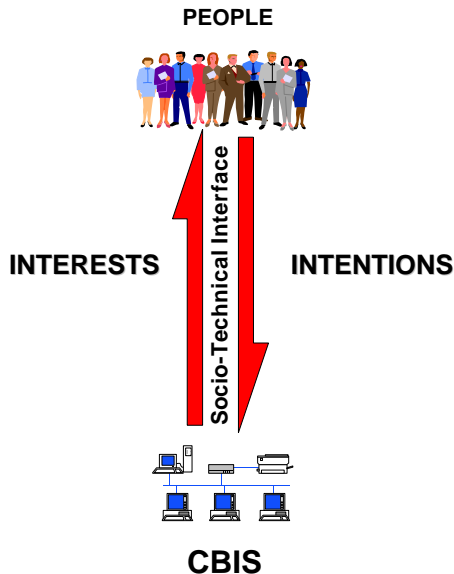


FIGURE 3 - COMPUTER AUDIT AS A SOCIO-TECHNICAL SYSTEM

These two relationships (HUMAN->CBIS & CBIS->HUMAN) provides us with the duality problems that we are supposed to make sense of in our own way as Computer Auditors. Both of these relationships comprise our concern within the course of an audit. Auditors will be concerned in locating the socio-technical interfaces that portrays this form of duality and plans the audit to address the different problematical issues that are associated with it.

In addressing a dual relationship, we are concerned with what exists in the auditee's socio-technical interface, that is the relationship between the humans or the auditee's employees that interface with the auditee's CBIS. This group of humans should be considered in terms of the dual relationship between themselves and the CBIS that they interface with. The duality of the relationship incorporates two aspects that are of particular importance to the auditor:

(i) *Who are the employees that can inflict a change to the AIS?*

Here the auditor will be concerned with the people that can directly or indirectly inflict a change to the system. These may include: programmers, system administrators, accountants and accounting clerks that affects the CBIS or are the agents of change within the CBIS. Their roles may be considered in terms of their ***intentional states of action***. We mean by intentional states of action, their formal and informal ability to inflict change upon the CBIS.

Formal Systems, Informal Systems and Change

Change (Fig.4) may occur because of the formal system's (Organisational) rules to force it upon the AIS at a certain time eg., update an employee pay record in the employees database at the end of the week, or because of the informal system's intention in inflicting it eg., destroy the employees database or perhaps update the database with fictitious information.

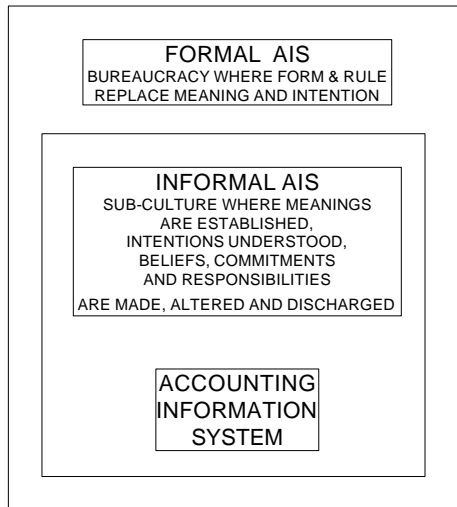


FIGURE 4 - FORMAL SYSTEM, INFORMAL SYSTEM & CHANGE

A Formal System can be thought of as the bureaucracy where form and rule on how to inflict change to the AIS, are being laid by the auditee's organisation. The auditor concerns within such a system is to assess whether the auditee's employees are functioning within the formal system, ie., they are following the rules on how to inflict change to the AIS.

On the other hand, an Informal System may be described as the tendency of humans within the formal system to interpret the formal rules and regulations according to their own sub-culture where meanings are established, intentions understood, beliefs, commitments and responsibilities are made, altered and discharged. In doing so, they present the auditor with the informal system that requires sufficient consideration in addressing why the formal rules have not been followed, why certain controls are there, why other controls should have been there, etc.

(ii) *Who are the employees that will be influenced by the changes made to the AIS?*

In this case, the auditor is concerned with the people that are directly or indirectly interested in the system. These may include: executives, administrators, accountants, accounting clerks that are affected by the CBIS. Humans tend to resist change especially if it threatens their existence or the way they are. It is often the case that individual interests might not coincide with group or organisational interests. Their roles may be considered in terms of their *intentional resistant states of action*. We mean by intentional resistant states of action, their formal and informal ability to inflict resistance upon the CBIS change agents or factors. This can take several forms: claiming inadequacy of the information provided by the CBIS, continuous complaints about the CBIS inability to provide politically correct information, etc.

Resistance to change may be viewed in a similar way as individuals response to change. The above diagram, Fig.4, outlines and explores the formal and informal interrelationships within an organisation. At a formal level, resistance may take the form of obstructing the introduction of new automated modules by discrediting their effectiveness and efficiency factors. At an informal level, employees may consider the introduction of a new computer system as a threat to making some of them redundant, so they may resist its introduction by all available means.

In considering both of the above questions, the auditor will be in a position to address the accountability of both of these groups of humans within the auditee's CBIS. Accountability in the sense of who is doing what with the AIS, and who did what to the AIS. This may provide some focal direction to the audit plan, audit tests and audit judgment. In other words, this will provide a richer picture of the auditee's socio-technical interfaces and would contribute to the auditor's interpretation of the auditee's socio-technical inscriptions.

VI. Interpreting Socio Technical Incriptions

Since the invention of the wheel, humans have used it in peace and in war, and were in a position to control its use for their own purposes. Computer technology is quite similar to that of wheel technology but it poses its own threat; where humans become one with this technology. They become one with it because of their use that affects it, as well as getting affected by it through: INFORMATION.

VI.A. Information and Language

In our human advancement in reaching for modernity or may we say reinventing ourselves, computers were invented. They were built to describe and interpret information about our own human world using a human way of communicating our perception of it; through language or our systems of signs.

In our practical area of interest: computer auditing, we are particularly concerned with information problems. We tend to tackle them from many different perspectives depending on the context of information and our interdisciplinary expertise eg., systems engineering, computer science, accounting, auditing, operational research, management science, etc.

A proper understanding of information can help us examine complex questions about information eg., their existence; their quantitative measures; their qualitative qualities; their valuation issues; etc. Information is problematic because it can be defined in so many ways that may contradict one another and therefore we are left to choose either the best definition or the best combination of definitions for our purposes.

For our purposes, it is important to identify at least the following elements: information represents something or someone of our physical world; it cannot exist independently of the perceiving

person who gives it meaning and somehow acts upon it, and the differences between data and information must be preserved, at least in so far as information is data organised by someone in a meaningful way for some perceived purpose.

VI.B. How the Problem is Viewed?

In any problem restructuring method or problem solving approach, it is fundamentally important how the problem is being viewed. This is integral to information and their interpreters, especially if these different views would affect how information is to be treated throughout the audit judgment formulation process.

When systems engineers face an information problem they may first look at the signalling or coding of messages. When computer scientists encounter the same problem, they may look first at the logic of the data structures. As for accounting specialists, they will be concerned with the social interactions and how to interpret accounting guidelines and procedures. Audit managers may take a broader look at the information problem and may be concerned with the business culture of the auditee's organisation, etc.

All of these four views are relevant to different elements of communication in organisations. Our challenge as computer auditors is to hold together these apparently disparate approaches in such a way as to be able to use information to control, to construct, to improve, to manage the audit and above all understand and make sense of our role and realities.

One particular established area of study that can provide us with a firm foundation on which to build is Semiotics. Semiotics or the *theory of signs* is particularly useful for it provides a common framework to the human interpretation of both social and technical signs.

VI.C. A Relative Objective Reality

In any social group activity, culture prevails within the norms of behaviour that members of that group adopt in their interactions with one another. They exist within a world of their own where they tend to see the world in a similar way. Hence, they create their own objective reality that is only relative to each one of them but they seem to understand and relate to one another's objective reality. In a sense, this impression that they share this 'public' system of references and of meaning is only due to, as Maturana (1970, 1978; Maturana & Varela, 1980) puts it, the 'consensual use' of symbols in our communication, i.e. the success of our communication in our everyday life gives us the impression that we are making use of an external system of representation which can be applied independently of the user - it makes us think that (natural) language provides the same system of references to each of us. Thus, our realisations are relative to our own existence and they are not shared among others in so far as we succeed in communicating our realisations with one another.

Stamper (1992) argues that, "*the classical Methodologies (Systems Development Methodologies) all share the perspective that the world is an objective reality and information represents it, whilst messages flow, like a mystical fluid, carrying information around the systems we build.*"

Boland considers that our everyday experience of the social world is a hermeneutic and that in the world we encounter a 'text' of meanings already made and being made; thus he argues that (1985, pp. 195-196):

..... the use, design and study of information systems is best understood as a hermeneutic process ... In using an information system, the available output is a text that must be read and interpreted by people other than its author. This is a hermeneutic task. In designing an information system, the designer reads the organisation and its intended users as a text in order to make an

interpretation that will provide the basis for a systems design. This is also a hermeneutic task. In studying information systems, social scientists read the interaction during systems design and use in order to interpret the significance and potential meanings they hold. Hence, doing research on information systems is yet another hermeneutic task.

In computer audit, the hermeneutic tasks that we encounter are numerous. In the course of an audit, some members of the audit team may be concerned with interpreting systems design plans, others with the internal system of controls or security administration plans and so on.

How can we come to know the truth, the underlying meaning of some aspect of knowledge or of an act of communication? Do all humans get to know the “real world” in the same way? Even if they do, are we certain that the understanding we have is the same as that of others? Obviously these questions are problematic and have long been perplexing to philosophers but are nevertheless representative of the pragmatic nature of information.

If we believe that knowledge is mediated by the cultural and social context in which it is produced, transmitted and received, then we have to formulate the relationship between information and culture. And by culture, we mean the magical space (Eco, 1962) of a certain community of individuals where they share a set of beliefs and assumptions about their own reality and existence and any other person from outside that community would feel disoriented and dislocated.

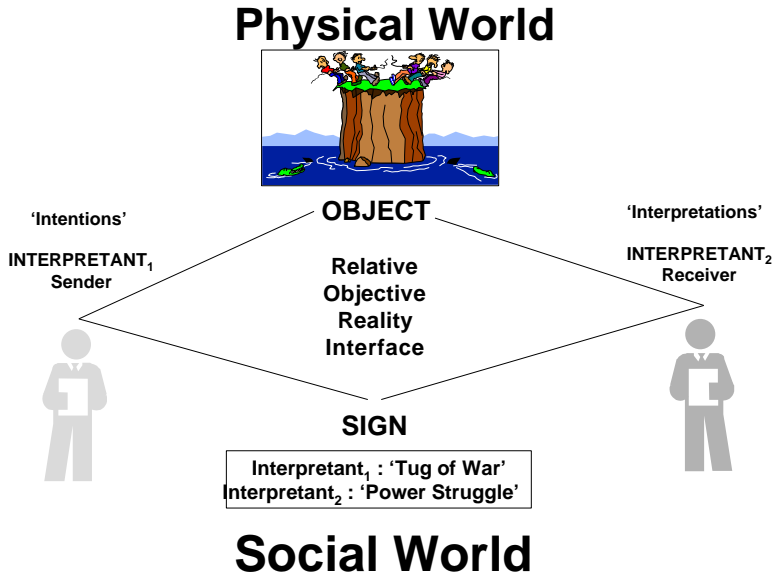


FIGURE 5 - A CULTURAL RELATIVE OBJECTIVE REALITY

The hieratic nature of the message is underlined by the fact that what is communicated is totally abstract and has no relation to reality, though sometimes there is an apparent relevance, so that the native is given a kind of counter-reality or ideal reality in which they think they live. For example, an inhabitant of Cairo lives by a code of norms and habits that are part of an organic whole and constitute a given culture as valid as our own, though very different.

Some may ponder when looking at figure 5: how can we possibly claim that the sender and receiver in figure - 5, hold a subjective reality of the communicated intentions and interpretations of SIGN, while SIGN exists within a social context interface that represents a 'relative objective reality'? or how could it be subjective to these individuals and objective to the social context of whom?

A group of shared cultural norms is ideologically empowering a sign's definition, and thus objective within the group. But, it is up to

the individual to use such an ideologically 'correct' or 'sound' definition of a certain sign. A social context is formed by a society's shared meanings and social norms and hence its signs' definitions are shared in common among the society's members. Thus, a shared definition of a sign will constitute a relative objective association with the sign.

It is to our mind, that if humans exist within a shared magical space then, their reality is relative to the group shared perceptions. These shared perceptions are in actual fact, perceptions that are empowered through the 'shared' ideological conceptions of their own magical space. The ideological conceptions are formed in their historical advancement for reinventing themselves through custom, religious belief, political and economic thought and so on.

Hence, every culture is only 'real' to its own community members but an 'unreal' magical space to members of other community groups. Because this view implies that there is a variety of 'objective realities' thus, all interpretations of knowledge are relative (Bloor, 1976) to the cultural context in which they are used.

If we apply this view to the computer audit, auditors at the different stages of the audit process, are using their own interpretation and understanding of what is meant by the CBIS. They are viewing the CBIS according to their own subjective interpretation that is governed by their group established '**ideological objective reality**' and they assess these information systems based on what is considered to be the norm system which is based on their established cultural norms, beliefs, and so on.

The above views, when adopted to computer audit, would suggest that our structured methodologies tend to concern ourselves with the processing of the messages leaving all concern for meaning and the purposes of the messages to the users because we feel they are issues outside our province.

VII. A Semiotic Approach To Computer Auditing

A context can be thought of as a social setting where human action takes place through the agency of language. Context provides meaning to a communicative action but the content of the message is constrained by its context of use. The problem with analysing people's actions is that we must dispense with the notion that there is necessarily a direct relationship between types of actions or behaviour and types of bodily movements.

VII.A. Communication

All communication (Jakobson, 1962; Saussure, 1960; Piaget, 1968) consists of a message initiated by an addresser, whose destination is an addressee. But the process is not as simple as that. The message requires contact between addresser and addressee, which may be oral, visual, electronic or whatever. Jakobson (1962) argues that it must be formulated in terms of a **code**: speech, numbers, writing, sound-formations, etc. And the message must refer to a context understood by both addresser and addressee, which enables the message to 'make sense' - as the context of the present discussion enables individual phrases and sentences to be meaningful where otherwise (uttered at, say, a football match) they would not.

In a socio-technical interface situation, a communication involves at least two parties: a human and a CBIS. This process can be characterised as a set of activities involving a sender with intentions to convey, a medium or channel for carrying signals, and a receiver who has the ability to interpret those signals.

In considering the act of communication of signals through the socio-technical interface, the computer has no bearing on the intentions, the meaning, or the interpretation of those signals. Hence, communication of signals can be thought of as a social phenomenon where intentions are being communicated and interpreted by humans.

The socio-technical interface can be thought of as a medium for the communication of signs between the social and technical components. Both sign systems originate from the same source: humans. They have been created by humans and being interpreted by humans too. Hence, semiotics plays an integral role in bringing together both sign systems. This is important so as to be able to have some common method to the creation and interpretation of signs infiltrating through the socio-technical interface.

VII.B. Signs

The classical definition (Stamper, 1992) of a sign “*aliquid stat pro aliquo*” was modified and expanded by C.S. Peirce into “*A sign is something which stands to somebody for something in some respect or capacity.*” Peirce’s definition emphasises that a sign has at least three aspects: (a) some physical representation; (b) something to which this refers to or alludes; and (c) somebody able to interpret this relationship.

Communication takes place by the use of signs which have a number of properties. These properties of signs can be thought of in terms of Stamper’s (1992) expansion on Peirce’s definition to include the following: physical signs, empirics, syntactics, semantics, pragmatics and the social level. These levels represent a range from the most social to the most technical aspects of communication within which we can employ different analytical tools.

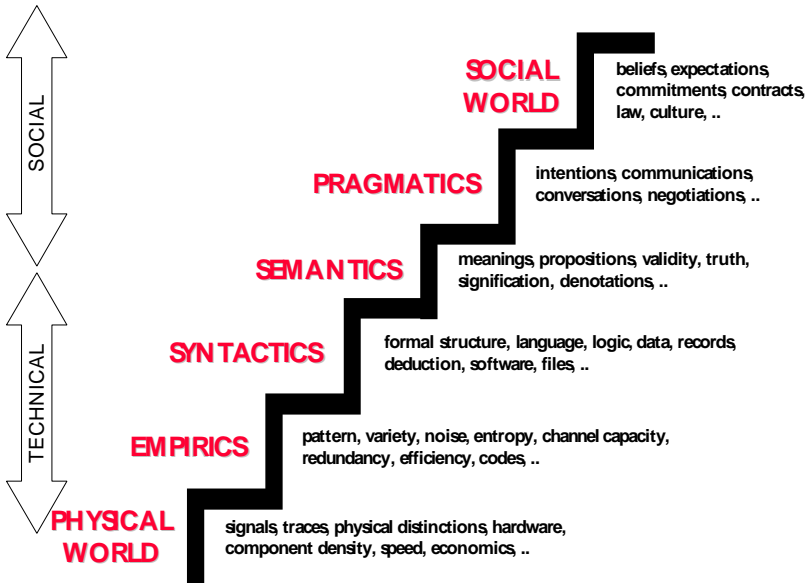


FIGURE 6 - SOCIO-TECHNICAL SEMIOTIC LEVELS
[Adapted From Stamper (1992)]

Pragmatics

Pragmatics takes into account the general culture and broad context of communication where we take account of the assumptions, expectations and beliefs of the agents involved, and assess them in relation to the social environment in which signs are being used.

Semantics

Semantics is concerned with meaning and knowledge where we take account of the connections that agents make between the signs that they use and their behaviour and actions.

Syntactics

Syntactics is concerned with the logic and grammar of communication where it provides us with tools for the construction of formal rules and the means by which they interrelate.

Empirics

Empirics describe the codes, signals and physical characteristics of the medium of communication where we employ the statistical description of the speed and quantity of signals and the mechanisms for encoding and decoding them.

The levels can be seen in two parts: **Pragmatics** and **Semantics** correspond to the content and purpose of communication. **Syntactics** and **Empirics** correspond to the form and means. This would leave us with the **Physical Sign** itself which we need to account for, and the **Social level** is best understood as a process of imparting form to a social situation.

The entire structure presupposes that responsible agents, which might be individuals, groups, or larger organisations, have commitments, expectations and relations within social frameworks.

VII.C. Semiotics

Most socio-technical interfaces are difficult to understand when you first look at them and require an analytical approach. We would like to adopt an approach that allows us to break them into discrete elements and tackle each element in an appropriate way. This then

allows us to concentrate on one particular aspect at a time, to undertake our analysis and design of the interface, while retaining the relationship between the part and the whole. This is fundamentally important for the quantity of information commonly generated in computer based information systems has exceeded the capacity of traditional analytical approaches. A proper understanding of information can help us to examine complex questions about computer based information systems.

The approach described above derived from the characteristics of signs, allows the auditor to see how socio-technical interfaces operate as sign processing systems where people do the processing. It allows us to identify problems which would not otherwise have come to our attention. Then we can examine the different properties of signs employed in the interface, and the understanding which comes from that examination contributes to our ability to form better judgments. The process of analysing signs and how they function is called **semiotics**.

Semiotics can be used to examine the socio-technical interface through identifying which parts of the interface would correspond to the different semiotic levels. As outlined earlier on, semiotics can be classified into two parts: (a) Pragmatics and semantics, and (b) Syntactics and Empirics. The first part (a) corresponds to the content and purpose of the communication, hence fostering the social aspect of the communication. The second part (b) corresponds to the form and means of the communication, hence, fostering the technical aspects of the communication.

VII.D. Norms

People who share a common culture see the world in a similar way. Their common experiences have shaped their views, their expectations and their assumptions. This can be seen easily in communities which are traditionally religious. The major religions of the world all specify in great detail not only what actions are expected, but they also guide us in our thinking.

A major characteristic of a thought community is the **norms** which give it shape. These norms are the mechanisms which transmit conventions within the thought community.

Norms can be found in every aspect of social interaction, can be manifested formally and informally, and are usually hidden behind the judgments we make, the assumptions we have, the beliefs we hold, and even the notions of reality we tolerate.

VII.E. Human Thought and Action

In order to understand the analysis of the character of thought in relation to the problems of formulating the audit judgment, then we need to understand the relationships between human thought and action.

Often identical signs have different interpreters (Fig. 5) and a key element to understanding a particular action is the intention that lies behind it. There are many things happening in the course of an action, but actions do not explain intentionality, because in action what we are doing depends in large part on what we think we are doing. What we are doing is the intention, but how we do it forms the action itself. As knower and actors, we have special access to our intentions.

Mental states have intentionality in so far as they are about something. The content and the type of the state of mind will serve to relate the mental state to the world. That is why we have minds with mental states: to represent the world to ourselves; to represent how it is, how we would like it to be, how we fear it may turn out, what we intend to do about it and so on.

Searle (1986) identified three features of intentionality that are of central importance. First, intentional states contains ideas of a certain mental type. Second, they determine their conditions of satisfaction, that is, they will be satisfied or not depending on whether the world matches the content of the state. And third,

sometimes they cause things to happen; that is, they bring about the state of affairs that they represent. He argues that intentionality can explain the relationship between thoughts and actions in the construction of an argument about context and the use people make of information.

By studying the pragmatic properties of signs, we can understand the cultural and contextual framework within which communication takes place. For our purposes, we are going to approach the socio-technical interface from that perspective where judgments made should be based on the pragmatic character of the interface.

VII.F. Rationality

Computer auditors in the audit process make judgments of rationality all the time, usually in criticising the system's internal controls or security measures as irrational, or in defending their own as rational. Judgements of human rationality commonly involve several different conceptions of rationality, including a logical conception used to judge thoughts, and an economic one used to judge actions or choices.

In classical terms, logic concerns Truth, while economics concerns Goodness, and judgments about both truth and goodness are crucial to intelligence. Intelligence (Doyle, 1992) involves both perception and action (Fig. 7).

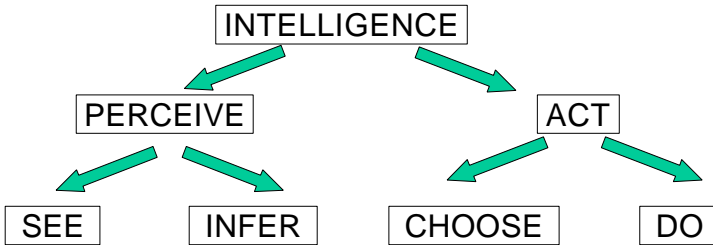


FIGURE 7 - INTELLIGENCE INVOLVES BOTH PERCEPTION
AND ACTION
[ADAPTED FROM DOYLE (1992)]

There are many types of perceptual actions (sight, touch, taste, etc.), one may of which is inference, which we take to be a method for perceiving explicitly relationships that lie implicit in the agent's incomplete beliefs. Similarly, one may think of action as simply doing something. But in the usual way of viewing action, most actions are not determined by agent's situation, but instead involve choices to do one thing rather than another. Thus both inference and choice are central operations in thinking.

Thinking can be restated in terms of two questions: What is the nature of knowledge (as it has been *perceived*) and how is this knowledge used (*acting* upon what has been perceived)? These questions, in our view, can be answered if we use semiotics as a vehicle for thinking and judgment (Fig 8).

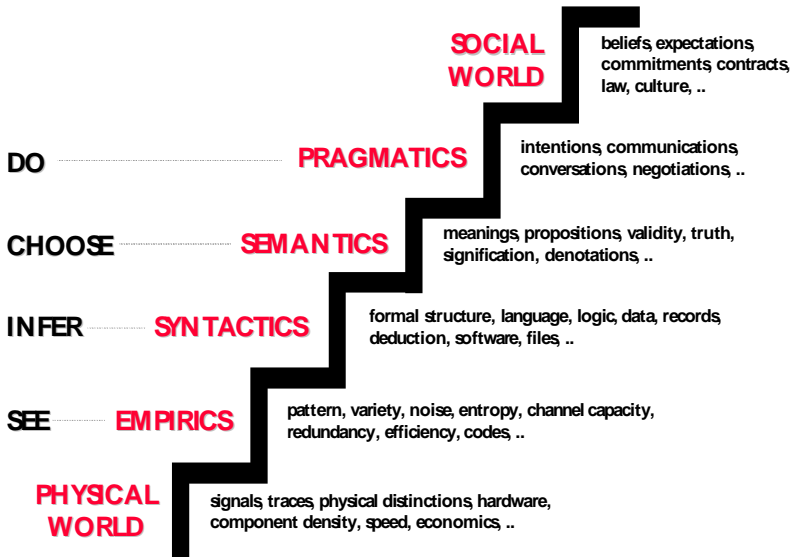


FIGURE 8 - INTELLIGENCE AND SEMIOTICS

In answering the first question, we need to identify which of the Semiological levels corresponds to that part of intelligence that is concerned with perception. Perception involves seeing and inference. As a human, you perceive the physical world and then state what you have seen using some form of communication. For our purposes, this is represented semiologically using empirics. As for the other component of perception, inference which is the formal structure that holds these signs together in some logical form that is, syntax.

The second question corresponds to the second component of intelligence, that is action. Action comprises both choice and doing. Choice can be best thought of as the intentional states that initiates a certain intentional action. These intentional states represent our emotional feelings that confers certain meanings to what has been perceived previously. Once these intentional states are put into action that is, doing or intentional actions (Schank *et al.*, 1988), they

represent our pragmatic outlook to the social world and relating it to the physical world. Obviously, answering these two questions mean nothing if there was no context of use, that is the social world where beliefs and culture is formed, contracts and commitments are made and judgements are reached.

Hence, in our search to realise the relationship between our physical and social worlds of our existence, we are trying to establish some relationship between both our mind and body through a semiological realisation of our states or worlds of our existence.

VII.G. An Outline of the Approach

The socio-technical interface was considered earlier on, to outline the communication process between humans and computers that comprises a form to establishing a relationship between the social and physical worlds of human existence or the mind-body paradigm. We think that now we can argue that;

IF
semiotics as an approach is concerned with the communication process
THEN
it can be adopted to understand the socio-technical interface as a medium for communication.

In order to adopt semiotics to understand or may we say to establish the relationship between the socio-technical aspects or worlds or states of the interface, we are required to adopt it to:

- (a) **Acquire** knowledge of the relationship between the socio-technical interface;
- (b) **Represent** our knowledge of the relationship between the socio-technical interface, and
- (c) **Manipulate** our knowledge of the relationship between the socio-technical interface.

In other words, we are realising conceptually the relationship through semiotics. This is especially the case with the inability (Stamper, 1992) of classical structured methodologies to capture meaning and purposes (Searle and Vanderveken, 1985) of the messages within information systems.

By doing so, we believe that we have a case that provides the basis for constructing a Semiological Computer Audit Methodology. The reason is that the concept of a sign is not a vague one but, one that can be operationalised either by experiment, to ascertain the existence of regularity of behaviour, perception, judgment, etc. or by expressing the sign in a written form and asking for judgments about the validity of the formulation.

VIII. An Example: Accounting Entries

In this section, we are going to demonstrate some of the above ideas in demonstrating an audit approach to the risk of possible misstatements in recording accounting entries.

Step One - Describe the Case

If we take for example, a simple entry of a credit sale, say between company Gaffikin & Co. and customer George Mickhail for \$100,000. The accounts receivable account for George Mickhail that is being held by Gaffikin & Co. is coded numerically as <20200> and the Sales account is coded numerically as <70000>. The entry was recorded by Mr Frino based on an authorisation by the financial comptroller Mr Oxland, as follows:

Date 2000	A/C Code	Direction Of Account	<Account Title>	<Amount >
15/1	20200	Dr	Accounts Receivable - G. Mickhail	100
	70000	Cr	Sales	100

(A Credit Sale to G. Mickhail)

In this example, we are going to demonstrate the risk of possible misstatements associated with such an accounting entry. The question that poses itself to us as auditors is: where should we begin when considering the risk of possible misstatements in an accounting entry?

Step Two - Construct the Interface

The first step, is to be able to construct the interface between the parties that are the focus of the accounting entry. The action or transaction or accounting entry represents two parties, namely: Mickhail and Gffikin&Co. Both are represented by the two accounts chosen to demonstrate the exchange of ownership of the merchandise sold. This exchange of ownership present us with a situation where one (Mickhail) owes the other (Gaffikin&Co.) in an exchange for the ownership of the mercandise, whereas the other (Gaffikin&Co.) earns revenue -that is not yet realised- out of this exchange of ownership.

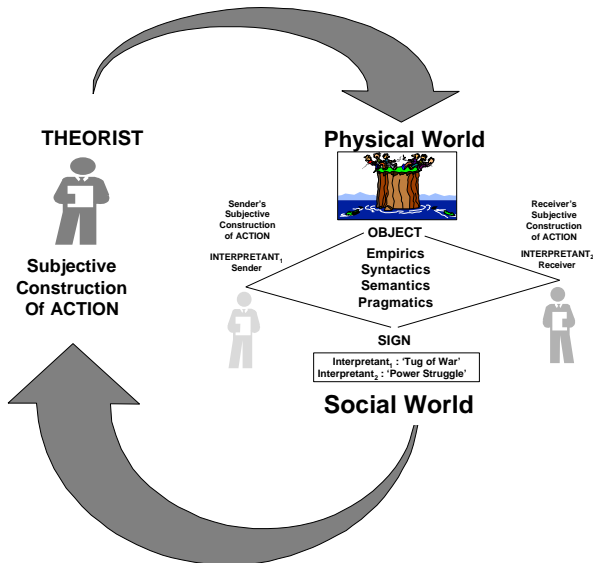


FIGURE 9 - A RESEARCHER'S VIEW OF THE CASE STUDY INTERFACE

So, as you can see this transaction represents the action that is of a dual relationship between Mickhail and Gaffikin&Co. and the accounting entry represents the actual message communicated through the ‘action#transaction’ interface. Hence, an action is a mere interface that stands in-between two parties that are communicating their semiological perceptions through the different semiological layers of the interface

Step Three - Construct the Interface Semiological Ontologies

This ownership relationship can be sketched semiologically into semiological ontology charts (Figure 10a..d) as follows:

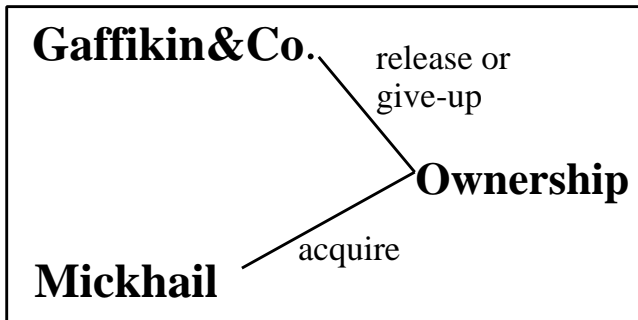


FIGURE 10a - PRAGMATIC ONTOLOGY CHART

The pragmatic ontology chart (Figure 10a) denotes the negotiation or communication of intentions of the transaction and here we represent the intention by Mickhail to acquire the ownership of the merchandise and the intention of Gaffikin&Co. to release or give-up the ownership of the merchandise.

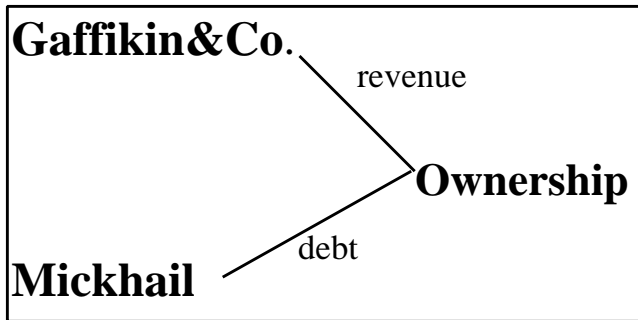


FIGURE 10b - SEMANTIC ONTOLOGY CHART

The semantic ontology chart (Figure 10b) denotes the meaning of the transaction and here we represent the fact that Gaffikin&Co. have acquired revenue and Mickhail have acquired a debt because of such an exchange of the ownership of the merchandise.

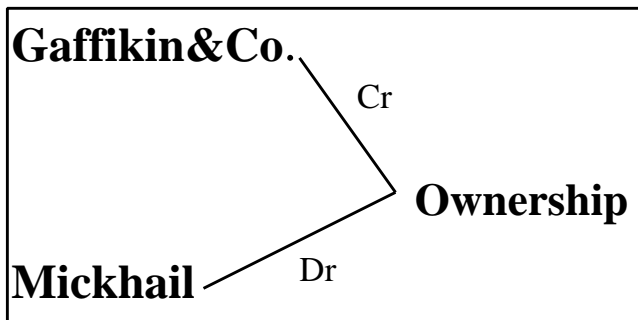


FIGURE 10c - SYNTACTIC ONTOLOGY CHART

The syntactic ontology chart (Figure 10c) denotes the formal structure (or grammar) of the transaction and here we represent the decision to assign the Debit or Credit nature to the participating parties of the transaction. In the above exchange of ownership, the Mickhail party owes a debt to Gaffikin&Co. which means that, Gaffikin&Co. have acquired a sales revenue which is of a credit nature, while Mickhail have acquired a debt owed to Gaffikin and

should be represented by its debit nature as one of Gaffikin&Co. debtors in Gaffikin&Co. books.

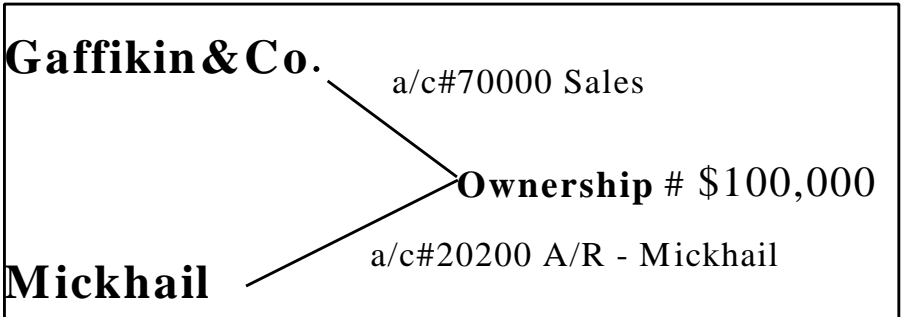


FIGURE 10d - EMPIRIC ONTOLOGY CHART

The empiric ontology chart (Figure 10d) denotes the **decision to assign** the account code <70000> labelled “Sales” to the party Gaffikin&Co. and account code <20200> labelled “Accounts Receivables - George Mickhail” to the party Mickhail. As for the value assigned to the transaction which is \$100,000 has been assigned to ownership as it is being shared (in the sense of being the common value of exchange) or agreed upon by both parties.

Once the semiological ontology charts has been constructed then we are in a position to raise once again the fundamental question of our enquiry: What are the risks of possible misstatements in an accounting entry?

Risk can be best understood as an act by someone that may affect someone else or something that is owned by someone. Within the accountancy domain, risks are usually associated with the concept of accountability that is, who is responsible for doing what. In other words, risk is a function of the exposures in accountability and any exposure in accountability is a function of who was irresponsible.

Thus, risk is directly related to who is there that may comprise an exposure to the interface.

In our case, the recording of the entry is orchestrated by a data entry clerk (Frino) and authorised by the financial comptroller (Oxland). They are the ones that are in a position that affects the interests of the parties represented by the interface that is, Gaffikin&Co. and Mickhail. At this point, a question raises itself: what is there that can be affected or what possibly can go wrong?

Step Four - Construct a Realisation of the Relationship States

In this step, we construct a table of our own -semiological- realisation of the three basic states of establishing the relationship between the social and physical worlds of the interface. The three states of establishing the relationship will be represented vertically, and our semiological realisations of these states will be represented horizontally as in the following table:

	Acquire Knowledge	Represent Knowledge	Manipulate Knowledge
Social World	Record a Credit Sale	Misstatement in recording the credit sale	Determine Who perpetrated the misstatements and Why?
Pragmatics	Exchange ownership of the merchandise Mikhail Gaffikin&Co. OWN DO NOT OWN	Mikhail Gaffikin&Co OWN DO NOT OWN OWN OWN DO NOT OWN DO NOT OWN DO NOT OWN OWN	Intentions underlying the interest in perpetratin the misstatement
Semantics	Mikhail OWES 100,000 Gaffikin EARNS 100,000	Mikhail Gaffikin&Co OWE EARN OWE NONE NONE EARN NONE NONE	who is interested in perpetrating a misstatement?

Syntactics	Accounting Direction of the accounts in question 20200 Debit 70000 Credit	incorrect direction of the accounts a/c# a/c# 20200 70000 Dr Cr OK Dr Dr X Cr Dr X Cr Cr X	
		* These possibilities are due to the fact of using a computerised accounting system	
Empirics	use pre-allocated account code [20200] for Mickhail and account code [70000] for Sales	incorrect: - account codes: (2 a/c); - \$\$ amount - Date	
Physical World	comprises the physical existence of Mickhail, Gaffikin & Co. and the actual merchandise being sold	inexistence of: - Mickhail - Merchandise - Gaffikin&Co. (no existence of the transaction in the first place)	Responsible agents of recording: - Mr Frino, data entry clerk of the transaction - Mr Oxland, authorise transaction - Computer Hacker ??

TABLE 1 - SEMIOLOGICAL REALISATIONS OF
ESTABLISHING THE POSSIBLE RELATIONSHIPS IN AN
ACTION

In the example, our concern is with any possible misstatements in recording an accounting entry. So the first step is to conceptualise what we are trying to establish! We are establishing a relationship between a customer and a company through the agency or action of recording an accounting entry.

Step Five - Calculate Possible Misstatements & Perpetrations

As with any relationship between two parties, there are $[2^n - 1]$ possible relationships of indifference ($n\#$ indicates the number of indifference in attributes that are unique characteristics to these parties) between them. In a typical communication situation, there are two parties involved; a sender and a receiver. There are $[2^n - 1]$ possible relationships (combinations) of indifference (or may we say, possible communication breakdowns!) that may take place with any communicated message or concern for communication between parties. Is that true? Let us explain.

In our example of accounting entries, there are two accounts with two codes that represent the two parties involved in the credit sale transaction. In addition, there is a value that is being attached to that transaction. Hence, we have two parties that have three different attributes that are there in this transaction. We can calculate the possible combinations of misstatements that may occur, this can be calculated through the following truth table:

a/c#20200	a/c#70000	Value\$100,000
No Error	No Error	No Error
No Error	No Error	Error
No Error	Error	No Error
No Error	Error	Error
Error	No Error	No Error
Error	No Error	Error
Error	Error	No Error
Error	Error	Error

From the above table, the possible combinations of misstatements are calculated by $[2^n - 1]$. We are not going to demonstrate the mathematical or statistical validity of the approach because it's way beyond the scope of this paper. Recording an entry may appear to be a straightforward action but the possible misstatements that may occur are equal to:

Possible Misstatements =

$$[2^n = (\text{Dr/Cr}, \$100000, \text{first account } <20200>, \text{second account } <70000>) - 1]$$

As we have calculated the number of combinations of possible misstatements that may occur, how about establishing who is responsible? Is that possible to be established?

In our view, we have to have assigned responsibilities with regards to each action taken. From the example, we have Mr Oxland that authorised the recording of the transaction and we have Mr Frino that recorded the transaction. In between both of them, we have $[2^n - 1]$ possibilities of their intentions in perpetrating an error for every possible misstatement in recording the accounting entry, as follows:

Mr Oxland	Mr Frino	Computer Hacker??
INTENDED	INTENDED	INTENDED
INTENDED	INTENDED	DID NOT INTEND
INTENDED	DID NOT INTEND	INTENDED
INTENDED	DID NOT INTEND	DID NOT INTEND
DID NOT INTEND	INTENDED	INTENDED
DID NOT INTEND	INTENDED	DID NOT INTEND
DID NOT INTEND	DID NOT INTEND	INTENDED
DID NOT INTEND	DID NOT INTEND	DID NOT INTEND

From the above, we have allowed for the accounts to be held on a computer and access maybe restricted but it is not impossible to penetrate a system and that's the reason for considering the computer hacker scenario. As you may see, the possible misstatements did not occur by themselves, but were perpetrated by one of the possible perpetrators. The aim here is to highlight the possible combinations of intentional perpetrations that may occur so as to direct the auditor in their examination of the system. Hence, the number of possible intentional perpetrations for any given misstatement is equal to:

Number of Possible Intentional Perpetrations =

$$[2^{n=(\text{Oxland, Frino, Hacker})} - 1]$$

So, if we would like to find out how many possible ways of intentional perpetrations may occur in a misstatement where the account code # 20200 is a fictitious debtor, can be calculated as follows:

Given:

- one account that maybe fictitious (a/c code: 20200)
- three possible agents are being identified as possible perpetrators

(Oxland, Frino and Hacker??)

$$\text{Possible Intentional Perpetrations} = [2^{n=(a/c \text{ code}\#20200) - 1}] * [2^{n=(\text{Oxland, Frino, Hacker}) - 1}]$$

Possible Intentional Perpetrations = 7 ways of intentional perpetrations of a misstatement

Thus, seven different ways of perpetrating a misstatement of including a fictitious account as part of the entry is no doubt significant. Having highlighted who are the participants and the possibility of their involvement in perpetrating a misstatement will no doubt direct the auditor's attention to consider either more thorough tests or direct the testing into areas of insignificant importance 'so-called', such as recording an accounting entry!

The aim here was to try to find a balance between perceptions and their statistical significance. Semiotics have opened our doors of perception to allow for possibilities we wouldn't have even thought that they existed! It is to be noted, however, that the above approach is: (a) an incomplete prototype, (b) an unstructured approach that allows for multi-perspectivity, differentiation and independency in its application, and (c) requires vigorous examination to validate its applicability. Nevertheless, its simplicity and clarity warrants exploring its potential for audit judgement.

IX. Conclusions & Further Research

In any computer audit, auditors are required to make objective judgments based on their subjective assessment of the computer based information system inter subjective informational content. This present us with a fundamental problem in computer audit judgments, that is the inter subjective interpretations of inter subjective information about computer based information systems.

This aim of this paper has been to outline an alternative outlook that considers both the social and technical elements of computer based

information systems. We have used the user systems interface which is a familiar concept to computer audit professionals. It is a concept that has often been dealt with in the information systems literature. We have intentionally used it, because we believe that any human activity is a mere information based system and it is our responsibility to address both social and technical implications rather than being only fascinated with the technical components of computer based information systems.

This outlook offers a way of perceiving what exists using the socio-technical interface view of a computer based information system. This view is particularly useful for it focuses on the communication process which is central to our human way of existing in this world. We have outlined how both humans and computers communicate using signs. The socio-technical interface can be thought of as a medium for the communication of signs between the social and technical components. Both sign systems originate from the same source: humans.

Communication takes place by the use of signs which have a number of properties. These properties of signs may include the following: physical signs, empirics, syntactics, semantics, pragmatics and the social level. The levels can be seen in two parts: **Pragmatics** and **Semantics** correspond to the content and purpose of communication. **Syntactics** and **Empirics** correspond to the form and means. This would leave us with the **Physical Sign** itself which we need to account for, and the **Social level** is best understood as a process of imparting form to a social situation. The entire structure presupposes that responsible agents, which might be individuals, groups, or larger organisations, have commitments, expectations and relations within social frameworks. The process of analysing signs and how they function is called: Semiotics.

As interpreters of signs in many different situations, we have learned a battery of different possible interpretations, only one of which will be appropriate in any situation. The problem is to find the right

interpretation at any given moment. And yet despite all these possible misunderstandings, people do seem to communicate perfectly well most of the time. There has to be a common agreement about meaning. This common agreement is generally not arrived at by some deliberate process of negotiation, but instead is embodied in the cultural conventions and norms of the social context.

The semiotic approach to analysing the formulation of computer audit judgements is vigorous because it is based upon the way people use signs. Signs do not carry around with them inherent meanings. A sign can mean whatever those using it choose it to mean, and the same sign may have several meanings depending upon the context. What is crucially different here from commonly held notions of meaning is the rejection of the idea of an intrinsic meaning to a sign, and its replacement by a model which relies upon two agents or groups interacting in a complex exchange whose effectiveness is tested in the actual behaviour of the parties involved. Thus, understanding how largely informal human interaction controls what counts as 'information' in a given context.

In conclusion, we would like to propose a different outlook to develop an alternative methodology to the traditional and classical methods. The aim of which is two folds: (a) to enable auditors capture meaning and purpose rather than form and means of what exists, so as to make better sense of our role and reality and (b) to call for a debate in defining and identifying with what constitutes our interdisciplinary area of practical knowledge, that is Computer Audit.

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