

**The Influence of the Internet Upon
The Individual Modeling of Reality**

by

Mark Faul

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Abstract:

The Internet has a significant impact upon how the individual constructs reality. Through the engagement of sensory information, individuals construct models of reality upon which they act. This process is influenced by the social environment through language and the particular communication environment through which information is exchanged. The Internet is a distinct communication environment which has a unique effect upon the individual construction of reality. This form of influence has significant implications for an individual's understanding of the world. The social environment will subsequently be effected by alternative conceptions of reality cognized at the individual level.

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Introduction:

The exchange of information through the Internet presents a new way of seeing and doing things. New kinds of information can be accessed, education and business transactions can be conducted online, messages and data can be exchanged instantly, and shared gaming environments can be created among remotely located parties. All of these innovations, to name only a few, are made possible by the Internet. These innovations have implications for both the individual and society. Studies have been done on how the Internet effects individual behaviors, or social phenomenon. However, what has thus far been overlooked by most researchers, is how the Internet effects the individual's understanding of reality when information is acquired through the Internet. This paper will argue that the Internet is a communication environment which structures and limits the individual's understanding of reality.

This thesis is based upon a theoretical approach called neurophenomenology, which is used to explain how an individual understands the world we live in. Using this theory, it will be argued that an individual understands the world by first using the senses to acquire information, and then processing that information in the brain. The social environment impacts this process through the languages used to communicate information, the nature of the communication environment, and socially interpreted understandings of the world.

Once these interrelations have been outlined, it will be argued that the Internet is a distinct social space, which has a unique impact upon how an individual understands the

world.

Before beginning with an examination of neurophenomenology, it is important to clarify some terminology used throughout this paper. Foremost, the subject of study, the Internet, is aptly defined by Benedikt (1991) as “a globally networked, computer-sustained, computer-accessed, and computer-generated, multidimensional, artificial or ‘virtual’ reality. In this reality, to which every [networked] computer is a window, seen or heard objects are neither physical nor, necessarily, representations of physical objects but are, rather, in form, character and action, made up of data, or pure information” (122-123). This definition accommodates the characterization of the Internet as a social space, due to its interconnected dynamic structural composition.

The terms ‘social space’ and ‘social environment’ denote any area within which the exchange of information between individuals or groups can occur between all parties involved.

‘Information’ and ‘knowledge’ are two terms which have closely related meanings. Information is data or stimuli which is available to an individual. Knowledge is information that has been received and interpreted by an individual.

Lastly, various terms surrounding the concept of reality will emerge throughout this paper. External reality, or the ‘operational environment’ refers to all entities, known or unknown, which constitute the physical universe. The cognitive environment, or modeled reality, refers to an individual’s understanding and experience of external reality.

So, the question I am asking is: ‘how does the Internet effect how an individual understands the world within which s/he lives?’

PART I - Individual Modeling of Reality

Neurophenomenology:

Before attempting to understand how the Internet effects the individual understanding of reality, it is important to first examine how the individual understands reality in general. This section will present and substantiate the pertinence of Laughlin et al's (1990) theoretical approach for explaining how the individual understands reality. Their theory argues that reality is a construction of the human brain, dependent upon the senses engaging information. Furthermore, this process is influenced by the social environment with which the individual interacts. As previously stated, the Internet is a social environment. Thus it will be argued that individual cognitive processes determine how information received through the Internet is understood.

There is an inherent distinction between the "experiential world that we actively construct for ourselves, [and] the world (including ourselves) apart from our knowledge and experience of it" (Laughlin & d'Aquili, 1974: pg 4).

A structuralist viewpoint would argue that individuals cognitively create models of reality, and then act upon those models, rather than upon reality itself. "Our nervous system progressively models and tests models of reality. Establishing reverberative circuits, mixing and entraining circuits into greater networks, the system regulates sensory input, relegation of information processing to appropriate networks, and assignment of appropriate action" (Laughlin et al, 1990: 82). The process is progressive, and reflects a

constant reconstruction of models relative to different information engaged by the individual. Laughlin et al emphasize the “primacy of the cognized environment, [whereby] we normally operate upon our cognized models of reality, and not upon reality itself. We quite naturally experience our models of reality as though they are reality” (Laughlin et al, 1990: 84). The kind of information that the individual engages in the construction of reality is thus essential to understanding how an individual views reality.

Why Use Neurophenomenology?

Before examining the specific details of neurophenomenology, it must be clearly stated why this approach is more advantageous than other approaches.

An examination of how reality is socially constructed is presented through the work of Berger and Luckmann (1966). Their work provides an understanding of how the social environment effects the individual interpretation of reality. However, as a foundational theoretical approach, their theory fails to address the individual cognitive levels of knowledge formation, which Laughlin et al highlight as central to the individual understanding of reality.

Further to the work of Berger and Luckmann (1966), John Searle (1995) presents an important account of the social environment, which he argues transcends generations. Socially constructed and shared understandings of external reality exist independent of the individual. All knowledge of reality is influenced by the language of the individual, as will be explored in chapter two. As with the work of Berger and Luckmann, Searle’s approach fails to sufficiently address how the individual constructs reality.

The science and technology studies (STS) approach, including the work of Hess (1997), examines the relationship between technological change and society. This is another important dimension of how the Internet relates to the individual understanding of reality. However, as with Berger & Luckmann, the individual cognitive level is omitted from the equation. Furthermore, an STS approach would examine the Internet as a component of a network, rather than a social environment. The latter classification lends itself more towards an understanding of how the individual is effected by the social exchange occurring through the Internet, as it is viewed as an interactive environment for information exchange, rather than a medium of exchange.

The neurophenomenological approach of Laughlin et al takes into consideration the perspectives of individuals from a range of different societal backgrounds. “This means that we must seriously consider other systems of knowledge developed in societies other than our own” (Laughlin et al, 1990: 4). A theoretical perspective which is sensitive to cultural variety is essential if any meaningful results are to be derived from this thesis, as the Internet already spans across the globe, and promises to reach all areas of the world in the not too distant future.

Laughlin et al (1990) term their approach as “anthropology-plus”, and highlight its benefits as: first, “embedding the question of consciousness in ethnology render[ing] the scope of inquiry more global relative to culture and more evolutionary relative to our species as a whole; [second,] incorporating a transpersonal and a phenomenological perspective within ethnology, provid[ing] the broadest range of human experience and the data base for recognizing many of the universal aspects of experience, which point to the

existence of universal structures mediating experience; [and finally] incorporation of the neurosciences into ethnology mak[ing] possible a more sophisticated, empirically grounded, ontogenetically and phylogenetically relevant theory of the structures of experience” (347). Neurophenomenology presents a broad perspective for grounding ontology, encompassing a fundamental understanding of neurocognitive processes across a variety of different cultural settings, based on experiential information.

Due to the individualistic nature of sensory engagement and cognitive information processing, and the cross-cultural implications of this study, neurophenomenology is the most appropriate perspective to serve as a foundational model for examining how the individual is effected by the Internet.

Modeling Reality

As previously stated, neurophenomenology is a means of explaining how the individual understands the world. Laughlin et al (1990) argue that the brain engages or receives information from the operational environment, which they define as external “reality, the environment, or the world” (82), and creates models based on that information which represent reality to that particular individual. The cognized environment is defined as the “set of countless models” (Laughlin et al, 1990: 83) of reality that an individual possesses. Each individual’s models will differ depending upon the kind of information that is received throughout a lifetime.

Individuals model reality in a manner which allows for adaptation to the environment within which the individual normally operates. One aspect of this

adaptation is genetically driven, whereby “the relations between the organism and its environment [are] a cybernetic loop such that the organism selects its environment while being conditioned by it” (Piaget, 1970: 50), reflecting millions of years of genetic adaptation. “The prime function of the brain in adaptation is the construction of a cognized environment within which neurocognitive operations may be carried out so that the activity of the organism assures its survival and reproduction” (Laughlin et al, 1990: 140). Under most circumstances, an individual’s model of reality will constitute those components of reality best suited to fulfill the goals and objectives of the particular individual.

Our understanding of ourselves is constructed in the brain. “The world is one that we construct, and in that process we construct ourselves and the experience of ourselves. We tend to construct ourselves as nouns in a world of other nouns, a thing in a world of other things” (Laughlin et al, 1990: 8). Even our understanding of ourselves is merely a construction of our own cognition, just as “the world of our experience is largely a construct of our nervous system” (Laughlin et al, 1990: 6). To avoid omitting the individual from external reality, Husserl proposes the concept of phenomenological reductionism, or bracketing, which views “the whole world as placed within the nature-setting, and presented in experience as real, taken completely ‘free from all theory’, just as it is in reality experienced, and made clearly manifest in and through the linkages of our experiences... set in brackets, untested indeed but also uncontested” (1931: 111). This perspective argues that the individual must be placed in the context of external reality through a self-reflexive process which integrates the individual into the larger

milieu of external reality.

Beyond defining the self, a reflexive process is also an integral aspect of the modeling of reality. The external world does not simply impose its presence upon the individual. The individual is an active participant in the construction of reality, engaging in “a reciprocal feedback relationship between cognition and perception” (Laughlin et al, 1990: 21). Our existing models of the external environment are as important as new information that we engage. “We see the world as we define it and structure it; we adapt to those definitions and cybernetically redefine the cognized environment in this overall cyclical action” (Laughlin et al, 1990: 257). Individuals actively engage information and compare it to previously conceived models of reality. “Models are being continuously tested for accuracy against reality and when a significant mismatch occurs between model and reality, some form of adaptive reorganization may occur” (Laughlin et al, 1990: 88). Models either change or are reified every time the individual engages sensory information.

The empirical ego “is a self-constructing, self-regulating system of neurophysiological entrainments emerging in a series of stages in the ontogeny of the individual. Through constant interaction with the operational environment, as constituted within its cognized environment, each stage of development replaces and subsumes its previous organizations within itself” (Laughlin et al, 1990: 252). The individual constructs reality through a reflexive process, whereby the world view of the individual is constantly modified based upon the information input and output by the individual. “Each action upon the environment produces information and assists in symbolic

representation of that toward which it is directed” (Laughlin et al, 1990: 254).

Individuals are thus active participants in the construction of reality, not only through cognitive processes, but also through non-cognitive action-based processes which effect reality outside of the individual.

Perceptual information and cognitive information are both integrated into a unified construction of reality. “Both the cognitive structures and the perceptual content lie within fields of transformational activity produced by the nervous system. These fields extend beyond and beneath both the cognitive structures that organize, define, and act upon the cognized environment and the neurognostic homeomorphogenic penetrations from the operational environment, which constitute the phenomenal world as essentially presented” (Laughlin et al, 1990: 261). As our cognitive understanding changes, so too does our perception of reality. If the Internet changes the way we understand reality, it will also change the way we see reality, and in a cyclical fashion, the way we understand what we perceive.

One could debate Laughlin et al’s neurophenomenological theory by arguing that if an individual’s cognitive processes cease to function, and are no longer modeling reality, an external reality persists independent of the individual, and thus an external reality exists. In response, Laughlin et al (1990) argue that “the Kantian ‘noumenal world’ can in fact be known, but never apart from the neurocognitive processes of knowing” (Laughlin et al, 1990: 83), because our awareness is dependent upon cognitive processes defining aspects of reality. Therefore, each individual understanding of reality, upon which that individual operates, is a model of external reality.

Manipulation of Reality

As Boortsin (1978) and Baudrillard (1983) among others have argued, the individual depiction of reality can be easily modified and replaced with a false or 'non-consensual' reality. These models of reality are falsified by the individual to mask unappealing aspects of external reality. A significant number of differences between individual models of reality emerge as a result of these circumstances.

Non-consensual models of reality are socially constructed, and cannot exist without substantiation from the individual or group. "The existence of observer-relative features of the world does not add any new material objects to reality, but it can add epistemically objective features to reality where the features in question exist relative to observers and users" (Searle, 1995: 10). Models of reality do not always mimic an external reality. Aspects of an individual's model of reality that are virtual manipulate aspects of external reality to create individually specific creations, or adaptations of reality.

Durkheim's functionalist approach substantiates the claim that non-consensual reality is influenced by the social group. Durkheim would argue that it is a manifestation of a social fact, which results from either too much integration within a social group, or too much regulation by the social group (Durkheim, 1951). Either of these circumstances leads the individual to deviate from the social norm, through the creation of a non-consensual model of reality.

External reality is replaced with false realities that omit the unwanted elements of external reality. "Cyberspace refers to an information space in which data is configured

in such a way as to give the operator the illusion of control, movement and access to information, in which he/she can be linked together with a large number of users via a puppet-like simulation which operates in a feedback loop to the operator” (Featherstone & Burows, 1995: 2-3). The problem with a virtual component in a model of reality is that it compromises the ability of the individual to deal with aspects of external reality that do not conform to those constructed by the individual.

It is important to consider how the manipulation of the modeling of reality effects the individual, because discrepancies between the ways in which different individuals understand reality, and discrepancies between what the individual may construct and then later encounter will present situations of conflict to the individual. The individual may not be able to properly cope with this discrepancy, and may not function appropriately within the surrounding environment if the expectations are different from information that is being engaged.

The theory of cognitive dissonance argues that “two elements [beliefs and/or behaviors] are in a dissonant relation if, considering these two alone, the obverse of one element would follow from the other” (Festinger, 1957: 13). Although inconsistencies between reality and a model of reality can exist, “cognitive inconsistency is unpleasant, and gives rise to pressures to reduce it” (Brewer & Crano, 1994: 83).

The empirical modification cycle (EMC) or equilibratory process “is a process by which the functioning of a neural network generates negative and positive feedback from the environment via afference. If a discrepancy between expectation and environmental input is detected, the neural model may transform its structure so that further expectations

predicated on the structure become increasingly isomorphic with environmental input” (Laughlin et al, 1990: 59-60). So Laughlin et al would argue that an individual’s non-consensual models of reality would be subject to modification if they deviated from external reality. Boorstin’s argument is still applicable in light of the EMC, as “a model can be reentrained only so much, only so fast, and only when it is developmentally ready” (Laughlin et al, 1990: 60). Thus the individual’s model of reality could continue to deviate from external reality. The existence of a deviant model will eventually either lead to the modification of that model based on the engagement of external information, difficulties for the individual to integrate within society, or will enact changes within the social group to conform to the new model.

Neurophenomenology & Sensory Engagement

Without a sensory system, an individual would be unable to engage information from the external world or enact the EMC. The individual would be capable only of self-contemplation, and would be unable to either express or retrieve information in a social environment. As Laughlin et al argue, “phenomena are sensorial events” (1990: 236). The individual modeling of reality is based entirely upon the sensorial engagement of information in the external world.

“It is the brain’s job to construct models of the organism’s environment that moderate between sensory input and response in order to optimize adaptation” (Laughlin et al, 1990:59). The senses serve the brain in the adaptive capacity through the reflexive exchange of information with the surrounding environment. Laughlin et al distinguish

between perception and cognition, whereby the physical qualities of reality are perceived by the sensory network of the individual, and transformed into “dots” of information. The cognitive system then orders these dots, and creates internal models of phenomena, which we understand to be reality.

The sensorium is a functional component of the cognitive process. “The sensorium is the functional space within the nervous system wherein the phenomenal aspects of the cognized environment are constituted and portrayed in moment-by-moment experience. Phenomenal experience is a construction mediated by the moment-by-moment reentrainment of perceptual and associative structures” (Laughlin et al, 1990: 106). Cognitive processes make sense of sensory information, and allow the individual to formulate models based upon this information. “The observer is *never, under any circumstances perceiving the noumenon, or the object ‘out there’, but is always operating upon the cognized object constituted within the sensorium of the observer*” (Laughlin et al, 1990: 337 – italics in original). Information is engaged by the senses and acted upon by the brain to formulate an understanding of the information received, relative to previously formed models of reality. The kinds of sensory information that an individual is exposed to (or the omission of certain types of sensory information) has a significant impact upon the model of reality that an individual constructs.

Existing models of reality also have a significant influence upon how sensorial information is cognitively processed. “Perception does not operate to differentiate percepts, and cognition may perform organizational operations upon percepts, but the world of phenomenal experience tends to remain ‘stuck together’ within sensorial space”

(Laughlin et al, 1990: 108). If individuals are exposed to limited sensorial information, as is the case with sensory information from the Internet, the individual must rely on information from previously conceived models of reality to replace missing sensory information. For example, the visual depiction of an apple could possess three dimensional qualities over the Internet, but would be unable to provide taste, smell or touch information. However, if the individual has previously tasted, smelled or touched an apple, then the existing model containing that sensory information could supplement the visual image. In this circumstance, the existing model would not be substantiated or reified to the same degree as if more complete sensory information were available. The adaptive capacity of the individual's model would be diminished in comparison.

Societal Influence on Model Construction

A very powerful source of influence upon the individual construction of models of reality is the social environment. As Schutz (1970) states, "all interpretation of [the] world is based upon a stock of previous experiences of it, our own experiences and those handed down to us by our parents and teachers, which in the form of 'knowledge at hand' function as a scheme of reference" (72). As was previously stated, the modeling of reality is an ongoing process. It is continuously developed by an individual from childhood. The social environment is instrumental in providing a substantive amount of information about external reality to a developing individual during early childhood, and throughout the life of the individual.

A social group can essentially control the development of models of reality, by

controlling the type of sensory information an individual receives. “Discrete neural networks and models mediate the perception of symbols, and by controlling awareness of certain symbols, a group may easily control the neural systems brought into play” (Laughlin et al, 1990: 146). Limiting access to certain types of sensory information will ultimately delimit the information understood by the individual. “Society not only controls much of the conditioning of neural entrainments, but is also able to control the cognized environments and behaviors of group members by manipulating objects as symbols” (Laughlin et al, 1990: 335). The way information is presented will effect how it is assimilated into an individual’s model of reality.

Laughlin (1995) defines phases of consciousness as “cognized and labeled categories of experience, and their mediating neurocognitive entrainments” (15). “In any society a finite set of possible phases of consciousness is declared normal. Members of that society are socialized to recognize the appropriate attributes of these phases and to consider them definitive of their own and of other’s mindstates” (Laughlin et al, 1990: 142). A normative understanding of how other individuals in a society perceive reality will effect how sensory information is engaged and processed by the individual through conformity to norms. In contrast, models of reality outside of an individual’s social environment have the potential to contain disparities and thus conflict with an individual’s normative understanding of the world.

Disparities can also exist on an individual level, in the form of what Leon Festinger termed cognitive dissonance. Cognitive dissonance involves “inconsistencies among a person’s cognitions (beliefs, attitudes, values) or between a cognition and

action” (Brewer & Crano, 1994: 83). An individual will attempt to reduce dissonance “through a change in attitudes of beliefs or through a change in behavior” (Brewer & Crano, 1994: 83).

In order to adapt to differences in perspective, reflexive processes allow the individual to test sensory information through the emission of information. “Learning of cultural material involves both the transmission of information by members of society and the transformation of that information by the equilibratory processes of the recipient’s neurocognitive structures” (Laughlin et al, 1990:66). The reflexive process is essential for substantiation or modification of existing models of reality. “The process of integration of knowledge and experience would seem to be very delicate because, we believe, social construction of knowledge and the experience of each individual are involved in a reciprocal feedback system whose properties may be changed in such a way that the link between knowledge and experience is broken”. (Laughlin et al, 1990: 214).

“A symbol evokes knowledge about the evoking stimulus, not the process in reality that provided the stimulus” (Laughlin et al, 1990: 163). This accounts for individual differences in interpretation. The symbol is constructed to represent the original stimulus as understood by the individual, and not necessarily as the original stimulus is understood by others.

It should be emphasized that the social environment is only one aspect of individual ontology, albeit an important one – worth separating and studying as an individual effect, but other factors are also influential (such as individual self-reflection). “The whole approach to individual cognition can only benefit from recognizing the

individual person's involvement with institution-building from the very start of the cognitive enterprise. Even the simple acts of classifying and remembering are institutionalized" (Douglas, 1986: 67). The Internet effects the role of the social environment, in the modeling of reality by the brain, through the creation of a new means of receiving and externalizing information. "Such technologies as radio, television, print and the computer, are means of representation and self-presentation. They are media for presenting ourselves to ourselves and to others, and as such they invite a definition or redefinition of the self" (Bolter, Jay in Strate, Jacobson & Gibson). The Internet is a medium which empowers more people to present themselves more easily than other forms of media, thus exacerbating the above process.

Before continuing with a more detailed examination of social factors which effect the individual modeling of reality, it is important to revisit and further explicate how the individual engages information through the senses.

Sensory Engagement:

The senses are essential tools which we use in the process of internalizing objective reality. In order to engage information around us, we see, touch, listen, taste and smell the surrounding environment. Without sensory engagement, individuals could not obtain any information about the world external to the individual psyche. "The mind is designed to respond actively to continuous information from an environment" (Moser, 1979: 54). The senses are the mechanism required for this process to occur.

The goals of this section are twofold. First, to examine the process of sensory engagement in order to delineate the means through which information from external reality is acquired. Second, to illustrate that the sensory engagement process is adversely effected when an individual exchanges information using the Internet.

Process of Sensory Engagement

The human being has five different senses which respectively engage different aspects of the environment external to us. The senses respond to stimulus properties of the environment, such as the “surrounding quality; multi-modal property; presence of peripheral stimulation; [or] presence of too much information” (Ittelson, 1973: 14). Thus, individuals actively interpret information from the environment, as opposed to being passive receivers of information.

Human senses interpret information from the external environment and create structural associations as interpretive measures of reality. “It is the body that is in the world and it is through the body and by means of its sense organs that the world is perceived” (Harris, 1974: pg 29). The individual modeling of reality is structured by the sensory data emitted from the external environment, which leads to the formation of similar structures representing external reality in the human brain.

As Classen, Howes and Synnott note, the perception of sensory information consists of both the sensation of stimuli, and the cognitive information associated with those stimuli (1994: 2). They argue that the cognitive understanding of sensory information is defined by a cultural group. Therefore, individuals interpret the meaning

of sights, sounds, tastes, smells, or touch, based on the meaning attributed to the sensation by the cultural group to which the individual belongs.

Variations exist between individuals due to both the kind of information engaged, and the meaning systems which an individual already possesses. A number of factors will influence the manner in which information is constructed into an individual's model of reality. "Numerous psychological experiments give testimony to the fact that there is no such thing as purely uniform and undifferentiated sensation" (Harris, 1974: pg 48), but rather the sensation of reality is dependent upon the previous contextualization of reality into a frame of understanding the world. Both the influence of the physical and social environments are of significant relevance to the manner in which sensory information is deciphered by the individual.

The structure of elements within external reality, or forms of matter, have characteristics unique to each element. For example, oxygen has characteristics that are unique from those of magnesium. The same rationale applies for unique collections of elements. For example, the characteristics of steel are distinct from those of plastic. Humans derive meaning from the characteristics of each element or collection of elements through the senses. It is the sensory perception of the characteristics of forms of matter that leads to the creation of knowledge. The means through which knowledge is created is thus limited partially by the nature of external reality, and the kind of information that is made available to the individual. As was mentioned earlier, an individual's existing models of reality will also impart an influence upon how information is perceived.

The individual development of knowledge occurs in the cognitive system, which is independent of the sensory system, although the two systems operate interdependently. “The perceptual systems, including the nerve centers at various levels up to the brain, are ways of seeking and extracting information about the environment from the flowing array of ambient energy” (Gibson, 1966: 5). It is through cognitive processes, which draw upon information collected by sensory engagement, that knowledge is developed. Human cognitive processes are, subsequently, structured by language systems, as will be explored later, which also act to prescribe meaning to the interpretation of information.

Relevance to Knowledge Construction

Taken from two extreme viewpoints, external reality is either imposed upon us, whereby everything we encounter has an influence upon how we construct knowledge; or individuals filter all information, and thus only construct knowledge systems based upon the information they cognitively process.

It should be reiterated that “the perceptual senses are faculties for acquisition of knowledge about what is currently perceptible in one’s environment” (Hacker, 1987: 63), distinct from cognitive processes of interpretation which formulate knowledge from information perceived through the senses.

Gibson argues that “the senses can obtain information about objects in the world without the intervention of an intellectual process” (1966: 2). However, the brain utilizes information engaged by the senses in the formulation of knowledge, or the modification of existing knowledge. Individuals select and filter all information from external reality,

and construct models of reality based on cognitively processed information, or knowledge.

Hacker (1987) emphasizes the inter-linkage between perception and sensation, whereby the human senses are tools of perception used in the interpretation of reality. Sensory perception facilitates the construction of individual realities, through establishing the means for acquiring information from the world. So, sensory engagement itself plays a supportive role, albeit an essential one, in the construction of knowledge, but ultimately the individual chooses what aspects of reality to process.

Individual models of reality are dependent upon information emitted from external reality. “The awareness of an object must result from some causal sequence in which the object plays a role, even if, as subjects of the awareness, we are not directly aware of the causal sequence” (Kelly, 1986: pg 36). Individual conceptions of reality develop because of the way that the basic elements of life: have evolved, and continue to develop and change; have been manipulated by people in the past; and are defined today and accepted as commonly understood views of the world, which is also structured or limited by the state of the structure. “Our senses have no capacity to create objects of awareness; they can only respond, in determinate ways, to external objects” (Kelly, 1986: pg 42). An example given by Kelly (1986: pg 32) is the creation of a unicorn, which is a fictional entity. Although the object itself is not a part of the real world, it is created through the manipulation of real objects, or the combination of a horse, and a horn. Thought processes have the same dependency upon an external reality. “Every perceived object [or aspect of external reality] is distinguished within a setting of relationships

which are themselves part of the structure of the known world” (Harris, 1974: pg 49), and thus the contextual environment within which knowledge is perceived, also exerts an influence upon the individual construction of reality. Even the creation of fantastic objects, such as the maps of Prester John’s kingdom, were founded in a knowledge of the geographic area thought to surround the kingdom. Without an existing understanding of the concept of a kingdom the resultant maps could not have emerged.

Sensory Engagement & the Internet

The Internet, as a communication environment, provides a unique forum for sensory engagement. In its current form, the Internet only allows for the exchange of limited kinds of sensory information¹. Only visual and auditory information can be exchanged, and visual information is the most prominent information exchanged over the Internet. This limitation has an effect upon the kinds of information that are engaged by the senses in this particular environment. Furthermore, the digital replication of reality, and engagement of this reproduction, rather than reality itself also has an effect upon an individual’s understanding of reality.

One of the greatest delimiting factors is the absence of information in virtual reality that would normally be present in the real world. For example, an individual visiting St.Paul’s Cathedral in person can smell and touch the surroundings, while a

¹

The Internet is a virtual reality, which has as its goal the replication of the real world. In the future, it is conceivable that virtual realities will replicate the real world to a much greater extent, and thus allow for the exchange of all different forms of sensory information (including not just sight and sound, but taste, smell and touch as well).

virtual visitor can only receive a digital interpretation of reality. Being submerged within the Cathedral and surrounded by the design and atmosphere of the Cathedral is a very different experience than visiting the Cathedral over the Internet. Even though it is possible to visually display all aspects of the Cathedral, and have a live audio feed to the virtual visitor, the kind of information that the real visitor derives would be far more comprehensive and detailed than the virtual visitor. The sensory information available through the Internet would thus contain less information, in contrast to engaging the information in person.

The digital reproduction of reality takes the engagement of information out of the context in which it normally occurs. For example, all of the sensory information related to a mid-Atlantic tropical storm could conceivably be experienced from the comfort of one's home. However, despite the possibility of precisely duplicating all sensory information, the experience derived from the home would differ significantly from that of a sailor physically located in the mid-Atlantic during a storm. With the advent of mobile 'wearable' computer systems², the manipulation of contextually-relevant sensory information is enhanced even further. The user is detached from the 'traditional' means of engaging information from the Internet through a desktop computer, to that of any physical location.

The information that is transmitted over the Internet is limited by standardization measures. Information exchange protocols of the Internet, which are required in order for computers to exchange information, limit how the information is presented. For example,

²See <http://www.wearcomp.org>

the presentation of text is largely limited to standard fonts, size, and layout. This limits variability between different individuals, and removes a substantial amount of individualization from the process of information exchange.

Although the Internet is heralded as an asymmetric communication environment, in many cases the dynamic nature of the Internet is very limited. The scope of sensory information available is controlled by the host of the information. With only limited engagement capabilities, an individual's empirical modification cycle cannot function properly. Without receiving feedback from external reality, information is imposed upon, rather than imparted to, an individual. A number of new developments are emerging in the Internet community to improve the ease with which information can be dynamically exchanged. Cold Fusion³, ASP⁴, and PhP⁵ programming languages allow the end-user to access and modify information in a database from an online source. The above technologies facilitate the dynamic exchange of information, however the scope of sensory information available is still governed by the source of the information.

Despite the limits on sensory information available through the Internet, it is still a powerful environment for the exchange of information. Existing meaning systems provide substantial descriptive terminology to supplement missing sensory information. In addition to the visual and auditory information available, a detailed description could be related of the smells, tastes, and feelings of a particular experience, that would allow

³See <http://www.allaire.com/coldfusion>

⁴See <http://www.microsoft.com/>

⁵See <http://www.php.net>

the individual to understand to some extent the kind of sensory information that is being missed.

The Internet has limited functionality in terms of communicating sensory information between individuals. However, this shortcoming is largely overcome by knowledge contained within an individual's existing models of reality. This knowledge is to a large extent socially contrived. As will be illustrated in the following section, the social environment plays a significant role in the formation of individual models of reality.

PART II - The Social Influence

In the preceding pages it was argued that the individual creates models of reality, based upon information from external reality which is engaged through the senses. That information is significantly influenced by the social environment through commonly shared languages, the communication environment in which information is exchanged, and socially constructed models of reality. The Internet is a unique social environment, as will be explored in part three. The goal of this section is to illustrate the significance of social factors upon the individual modeling of reality.

Language:

Language is the core element upon which all knowledge is formulated.

“Language can be defined as a rule-governed symbol system that allows its users to generate meaning and, in the process, to define reality” (Trenholm, 1995: 82). Language not only includes both spoken and written means of exchange, but also includes other forms of exchange such as non-verbal, sign-based exchange, or even electric-signal based symbol systems, such as computer languages. The social environment is instrumental in the formation of language systems; thus, language is socially constructed. It will be argued that language dictates how individuals think, and subsequently how individuals model reality. The examination of language in relation to the neurophenomenological model is critical, as the Internet employs many new uses of language, as will be explored in examining the Internet as a distinct social space.

Socially Constructed

Language is used to define elements of reality. Furthermore, language is used to describe and understand the particularities of reality. “The common objectifications of everyday life are maintained primarily by linguistic signification. Everyday life is, above all, life with and by means of the language I share with my fellowmen” (Berger & Luckmann, 1966: 35). The emphasis here, is of course the social environment, as a shared environment with others. It is in the socially defined understandings of external reality, which are communicated through language, that social systems are founded, and

are dependent upon.

The exchange of information is largely dependent upon a structured language system, whereby a common understanding of information is shared among the members of a group of people. “Language objectivates shared experiences and makes them available to all within the linguistic community, thus becoming both the basis and the instrument of the collective stock of knowledge. Language provides the means for objectifying new experiences, allowing their incorporation into the already existing stock of knowledge, and it is the most important means by which the objectivated and objectified sedimentations are transmitted in the tradition of the collectivity in question” (Berger & Luckmann, 1966: 68). A social group develops language systems over time in an ongoing process of refinement.

Luckmann (1983) extends the claim that “the actual use of language is determined by communicative matrices that are embedded in - and socially controlled by - institutions, groups, classes” (90). The language system of a social group is to some extent defined by formal organizations. Groups of individuals that collect to form an institutional arrangement, do so as a result of a common understanding of reality, expressed through a shared language system. “The feature of language essential for the constitution of institutional facts is the existence of symbolic devices, such as words, that by convention mean or represent or symbolize something beyond themselves” (Searle, 1995: 60). Institutional arrangements are thus both formed and expressed through language systems. An example particular to the Internet, would be the W3 organization, whom oversee the development of the Internet, and have a shared understanding of the

functional requisites and the technical structure of the Internet. The W3 defines language elements which constitute the exchange protocols used by the Internet.

“Real worlds created by human cultures for the persons operating within them are inescapably dependent upon the structure of their symbolic systems” (Holzner, 1968: 35), which includes language systems. “No two languages are ever sufficiently similar to be considered as representing the same social reality” (Sapir, 1988: 145). Disparities in views of external reality can be linked to the language of the individual, and the socially constructed views of reality residing in the language system.

In order for any kind of knowledge to be publically communicated a commonly understood system of symbols or symbolic meanings, such as a language, is necessary to insure that all recipients understand the intention of the sender. “The vernacular of everyday life is primarily a language of named things and events, and any name includes a typification and generalization referring to the relevance system prevailing in the linguistic in-group” (Schutz, 1970: 98). Meanings shared between individuals are the fundamental basis of knowledge, as without a shared meaning system, or a language, information could not be exchanged. This is a distinguishing factor in human evolution. In summarizing Scheler, Ranly states that “man shows his essential superiority to lower animals by his ability to understand (*verstehen*) the meaning of his social experience and to translate and communicate his understanding through language” (1966: 72). What the terminology represents in external reality is not the ultimate source of knowledge. Rather, the interpretation of external reality through language, which provides a shared or common understanding of external reality serves as the source of knowledge.

Language & Cognition

The language systems which humans use to communicate information between individuals, structures the way we think. The Sapir-Whorf hypothesis argues that “the structure of a human being’s language influences the manner in which he understands reality and behaves with respect to it” (Whorf, 1956: 23). The human brain draws upon language to process information using the learned structure of linguistic systems.

Individual cognitive processes are dependent upon linguistic systems. “Only in a quite limited sense does the single individual create out of himself the mode of speech and of thought we attribute to him. He speaks the language of his group; he thinks in the manner in which his group thinks” (Mannheim, 1946: 2). Individual models of reality, as constructed through the interpretation of information collected by the senses, are limited by the terminology attributed to components of reality.

Individuals do not perceive reality construction as being limited by a structured language system, as “the real world is to a large extent unconsciously built upon the language habits of the group” (Sapir, 1988: 145). The language we use to create reality is a paradigm, which limits our ability to conceive of reality in alternate ways. This limitation is largely unnoticed as our thought processes are developed in synchronicity with the development of language.

Modeling of Reality

Although the real world is largely open to individual interpretation, the construction of reality by the individual is structured by language. “We see hear and

otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation” (Sapir, 1988: 145). The development of knowledge from sensory engagement is limited by the language with which knowledge is constructed.

As previously stated, reality construction is a process of “interpretation and re-interpretation of experience” (Holzner, 1968: 15). Language facilitates the re-interpretation of the real world as constructed in an individual’s model of reality. Individuals engage external reality through a predefined view which is structured by language.

All knowledge is dependent upon “the observer’s perspective or frame of reference, the structure of the symbolic system he uses, its anchorage in his experience, and by the rules that specify particular ways and channels of communicating the resulting meanings to others” (Holzner, 1968: 23). Language thus impacts upon both the thought processes for the cognitive development of knowledge, and the communicative means through which knowledge is derived from the social environment.

Communication Environment:

A communication environment is the inculcation of “communication including verbal and non-verbal aspects of social interaction as well as those material objects which represent by a setting for and artifact of, the processes of social communication” (Foote, 1983: 25). Models of reality are influenced by the nature of the environment through

which information is exchanged or communicated.

As the last section illustrated, a commonly understood language system has an effect upon the individual modeling of reality. Linguistic exchange is dependent upon a communication environment. The existence of communication environments, or social spaces, thus precedes socially defined means of exchanging information, or the formation of languages.

Communication, as either linguistic expression or non-verbal behavioral acts⁶, allows for the exchange of information between individuals who hold a shared understanding of a set of signs or symbols. Communication thus acts as both an externalizing agent or internalizing process in the empirical modification cycle. Habermas' "communicative model of action presupposes language as a medium of uncurtailed communication whereby speakers and hearers, out of the context of their preinterpreted lifeworld, refer simultaneously to things in the objective, social and subjective worlds in order to negotiate common definitions of the situation" (Habermas, 1981: 95). The communication environment makes possible the exchange of information between individuals, and also allows for symbolic associations between aspects of reality and a social understanding of that reality.

The exchange of information between individuals across time, leads to collectively defined interpretations of reality, which is necessary for social coexistence.

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For a complete description of non-verbal communication see the work of Adler & Rodman (1994); Richmond & McCroskey (1995); Barker & Gaut (1996); Trenholm (1995).

“It is through the action of communicating that society actually operates and evolves; this process is encompassed and structured by the actors’ lifeworlds” (Wallace & Wolf, 1995: 123) or models of reality. Without a shared communication environment, a social environment is impossible. Individuals must be able to exchange information in order to develop any kind of shared understanding of external reality.

Theory of Communicative Action

Jurgen Habermas (1981) elicits a distinction between the objective world, the social world, and the subjective world (100) which corresponds to the neurophenomenological model. External reality consists of the objective and social worlds, and an individual’s model of reality is the subjective world. The distinction between objective and social worlds is very relevant due to the significant influence of the social world upon the individual modeling of reality.

Habermas defines “the concept of communicative action [as] the interaction of at least two subjects capable of speech and action who establish interpersonal relations (whether verbal or by extra-verbal means)” (1981: 86). The communication act is the micro-level action that contributes to the larger macro-level construction of reality. It is the combined collection of the communicative acts of all individuals which defines the social world. The degree to which the social world is defined by an individual is dependent upon factors of immersion within the environment. The more an individual is immersed within a social environment, and actively contributes information to that environment, the greater potential there is for that individual to influence external reality.

At the same time, however, increased emersion in a social environment also creates greater potential for an individual to be influenced by the social world. The Internet extends the sphere of influence across geographic boundaries, and to a greater audience of individuals.

The exchange of information in a social environment transpires in a reflexive manner. “Action domains which are primarily integrated socially behave asymmetrically” (Habermas, 1991: 257). In order for the individual to play an active role in a social environment, the environment must allow for the exchange of information in a two-way process between individuals. Therefore, television and radio do not facilitate individual input into the social environment, but rather are transmissive mediums for the communication of information. The distinction is important, because the individual cannot interactively effect information broadcast over the television or radio (at least not directly). The Internet, however, allows to a very large extent, for the reflexive exchange of information.

Commonly, individuals of similar socio-economic status, similar ethnic background, or similar political views tend to share commonalities in the way reality is modeled. “Cultural interpretive systems or worldviews reflect the background knowledge of social groups and guarantee an interconnection among the multiplicity of their action orientations” (Habermas, 1981: 43). The behavioral actions of the members of that group can be predicted by understanding how they perceive reality. Of course every individual has the potential for a unique outlook on the real world, but there are definite subsets of knowledge that exist in both informal subgroups, and institutional sub-groups (as will be

further explored below).

If a shared understanding of reality is plagued with doubt and uncertainty, or is not commonly accepted by all members of the group, an individual's model of reality will be challenged to a greater degree than an individual belonging to a group with a clearly defined understanding of reality. "The more the world view that furnishes the cultural stock of knowledge is decentered, the less the need for understanding is covered in advance by an interpreted lifeworld immune from critique, and the more this need has to be met by the interpretive accomplishments of the participants themselves" (Habermas, 1981: 70). A well substantiated social interpretation of reality thus has a powerful effect upon how an individual will model reality. The functional capacity of a communication environment to support a socially agreed upon understanding of reality will effect the degree to which an individual interrelates with socially constructed models of reality.

The Built Environment

The objective world is also influenced by the social world through the built environment, or the physical environment as designed or manipulated by humans. The built environment communicates information to the individual based on the structural composition or functional attributes of the environment. The Internet is, structurally speaking, an element of the built environment, and functions as an aspect of the built environment through influencing communicative exchange.

The built environment is an expression of the models of reality belonging to individuals or groups of people. The built environment is a collection of "symbols

representing ideas and practices in the social realm” (Gutman, 1976: 43). This information is communicated to others through the built environment itself as an expression of individually or socially conceived models of reality. There is, therefore, purpose or intent underlying the built environment. “Who communicates with whom, under what conditions, when, where, in which context, how, and so on are important ways in which the built environment and social organization are linked” (Rapoport, 1976: 19), just as an individual’s modeling of reality and the built environment are linked and related.

The intent is not to argue that the built environment directs the modeling of reality. “The human self has a remarkable capacity for absorbing and internalizing the stimuli administered to it by the environment, but it also has astounding powers of resistance” (Gutman, 1976: 47). To reiterate what was established earlier, the individual is pro-active in modeling reality, rather than a mere recipient of incoming information.

The more effectively a communication environment facilitates social exchange, the greater the potential for the social environment to affect an individual’s model of reality. An effective communication environment thus facilitates the adoption of social constructions of reality. The Internet is a highly effective social space, as will be argued later. It is imperative at this point to explore how an individual’s model of reality is effected by the socially defined interpretation of reality.

The Social Construction of Reality:

Influence of the Individual

The social construction of reality is highly dependent upon knowledge created through generations of individuals, or a social stock of knowledge. Furthermore, the social environment is continuously built from the input of individuals within the society, both through the substantiation of existing knowledge, and the modification of knowledge or creation of new knowledge. Individuals are socialized by exposure to elements of the social stock of knowledge. It is from this knowledge that people develop an understanding of reality, and it is within different frameworks of viewing reality that people in different societies understand the world differently. “Roles appear as soon as a common stock of knowledge containing reciprocal typifications of conduct is in process of formation, a process that, as we have seen, is endemic to social interaction and prior to institutionalization proper” (Berger & Luckmann, 1966: 74). Languages, for example, are vital elements in the social stock of knowledge, which have developed over many generations. Despite the apparent objectification of the social stock of knowledge, “both in its genesis (social order is the result of past human activity) and its existence in any instant of time (social order exists only and insofar as human activity continues to produce it) it is a human product” (Berger & Luckmann, 1966: 52).

How does an individual’s modeling of reality, relate to the common stock of knowledge in a society? “The symbolic universe provides order for the subjective apprehension of biographical experience. Experiences belonging to different spheres of

reality are integrated by incorporation in the same, overarching universe of meaning” (Berger & Luckmann, 1966: 97). So, fundamentally all individuals in a society relate to a common frame of reference, that being the same symbolic universe, within which individual conceptions of reality are derived. “Different objects present themselves to consciousness as constituents of different spheres of reality” (Berger & Luckmann, 1966:21). Differences in perspective are inherent due to the immense amount of information from which knowledge is created, and the possibilities for combinations of information and the effects that different combinations of information have upon individual models.

A societies’ common stock of knowledge is constantly altered by individuals in the society. “The social reality of everyday life is apprehended in a continuum of typifications, which are progressively anonymous as they are removed from the ‘here and now’ of the face-to-face situation” (Berger & Luckmann, 1966: 33). A stock of knowledge is not a pre-packaged body of ideas and meanings that can be captured at any moment in time. Situations change, ideas change, and life changes. These changes are reflected in how members of a society view the world. With each change in social conduct, modifications are made to the social stock of knowledge. The reification process is constantly ongoing which keeps the stock of knowledge contemporary.

An essential factor in the reification process is the communicative environment. If the environment facilitates communicative exchange then the process will be more dynamic, more engaging, and more thorough. The stock of knowledge developed in a supportive communication environment will encompass a broader scope of commonly

understood meanings, and a more systematically scrutinized body of knowledge. The Internet is a communication environment which facilitates the ongoing exchange of information, and as a result, the dynamic modification of social knowledge.

Without the symbolic representation of reality, or an aspect thereof, knowledge cannot be shared between individuals. Furthermore, as previously illustrated, a communication environment is required for the process of reality construction to occur (or knowledge building). The process then follows that: a society must establish a shared understanding of a symbol system (such as a language); knowledge is then formed through the formulation of symbols or language into meaning; the knowledge base of a society is the resultant collection of different formulations of symbols into meanings (which are constantly changing with the addition of further formulations or the modification of existing ones). The diffusion of a knowledge base is dependent upon a communication environment. Furthermore, a change in the knowledge base is dependent upon a language or symbol system. These social factors influence the way reality is modeled.

Social Influence on the Individual

A significant amount of influence upon individual models of reality is attributable to the social environment. “Environment perception is largely a social phenomenon” (Ittelson, 1973: 15). A culture or society has shared understandings about external reality, which have influences independent of those emitted from external reality itself. The social world with which an individual has contact, delivers messages regarding how the

external world has been normatively defined. As Parsons argues, “people internalize the values of a society; that is they make the social values of the cultural system their own by learning from other actors in the social system what is expected of them” (Wallace & Wolf, 1995: pg 30). Post Modernism stresses the “plural nature of reality and the inherently unstable and shifting nature of the subject and individual consciousness” (Wallace & Wolf, 1995: pg 345). Individual constructions of reality will thus change depending upon information engaged in the external environment.

In order for the individual to participate in the social environment, an understanding of the meaning system must first be developed. “In the life of every individual, there is a temporal sequence, in the course of which he is inducted into participation in the societal dialectic. The beginning point of the process is internalization: the immediate apprehension or interpretation of an objective event as expressing meaning, that is of manifestation of another’s subjective processes which thereby becomes subjectively meaningful to myself” (Berger & Luckmann, 1966: 119). This process of socialization, which occurs over the course of a lifetime, is essential for individual participation in the social construction of knowledge.

The individual is limited in his or her ability to participate in the social construction of reality by time. Both the finite nature of time, which limits the span of time for which an individual exists, and temporal sequences which are imposed upon the individual by a society, limit the ability of the individual to contribute to the social construction of reality.

Individual cognition is largely dependent upon the social environment to teach the

individual about the external world. Language, symbols, and knowledge are all constructed within the social environment. “Not only the content of knowledge and the very choice of objects are conditioned by the dominating social interests, but the forms of the spiritual acts of knowledge themselves are necessarily sociological and are mutually conditioned in and through the structure of the society in which they occur” (Ranly, 1966: 73). Education rests upon models of reality created by others; the exchange of information is structured by the language through which information is exchanged; and the symbolic representation of reality resides in previously conceptualized definitions of reality.

Without a social setting, an individual’s understanding of reality would be limited to his or her degree of exposure to, or experience in, the world. “In the context of social life the various experiences of reality must be recognized as socially maintained constructions” (Holzner, 1968: 13). Individuals constantly reflect upon the social environment for substantiation of the reality they construct (to resolve cognitive dissonance, as was examined earlier). Changes in models of reality are largely attributable to normative conceptions of knowledge accepted by society.

If an individual conception of reality differs from that of the social group to which the individual belongs, reality shock may occur, which Holzner defines as occurring when “social support for our interpretation of reality is withdrawn” (1968: 11). A reorientation of individual reality to conform to socially prescribed knowledge is a common means of resolving reality shock.

The social environment has a further influence upon the individual construction of

reality, through the interrelationship between the social environment and the physical environment, defined as the built environment. The social manipulation of the physical environment into structures reflecting social interests, contain both information from the physical characteristics of the entity, and socially understood prescriptions that invoked the development of the built structure.

The social construction of reality entails the contribution of a social group to an individual's understanding of the world. "For a large class of utterances, each individual utterance requires for its intelligibility a publically accessible reality" (Searle, 1995: 190). We derive the ability to construct knowledge from the social group (through language; and with reflection upon previous conceptions of reality). This knowledge base is shared in common by members of a social group, irrespective of ideology, the foundations upon which an ideology can be based. Thus reality is constructed through the formulation of language into meaning. For example, doctors argue that smoking will kill you prematurely. This utterance can be disputed either in favor or against the statement, but without the original statement there is nothing to contest. Therefore, social reality is understood through a collection of meaningful language expressions, and knowledge is terminologically driven.

As was stated previously, language is used to symbolize or represent objective reality using standardized terminology that can be shared among a collective of individuals. "Statements are attempts to describe how things are in the world, which exists independently of the statement" (Searle, 1995: 200), as are symbols or signs of the objects they represent. For example, 'snow is white' is meaningful only because the

social group has a shared understanding of: 'snow', being a solidified form of water; 'is', meaning definitive of; and 'white', being the color white. All the terms are in fact arbitrary, in that 'snow is black' could as easily mean the same thing if the term 'black' were assigned the meaning we commonly understand as 'white'. "The aim of the statement is to get its propositional content to match an independently existing reality, not to change reality to match the propositional content" (Searle, 1995: 217). Models of reality are thus constructed from a series of descriptive terminology, which represents aspects of external reality.

The act of "socialization [involves] the comprehensive and consistent induction of an individual into the objective world of a society or a sector of it" (Berger & Luckmann, 1966:120). This process is both essential in order for the individual to be able to participate in the society, and in order for the society to grow and change in response to the behavioral aspects of the constituent members of the society.

The process of knowledge construction involves a reflexive process of knowledge exchange among members of a society. "The individual member of society, simultaneously externalizes his own being into the social world and internalizes it as an objective reality" (Berger & Luckmann, 1966: 119). The social construction of knowledge thus evolves as a process of individual reification from the social collective. "The social processes involved in both the formation and maintenance of identity are determined by the social structure. Conversely, the identities produced by the interplay of organism, individual consciousness and social structure react upon the given social structure, maintaining it, modifying it, or even reshaping it" (Berger & Luckmann, 1966:

159). In order for knowledge to be socially constructed, it must be socially substantiated.

It is important to note however that externalization is not necessary for external reality to exist (it already exists as physical states and the collective body of knowledge). However, externalization is necessary for internalization to occur. An externalizing act, even as simple as consciousness or awareness is necessary to invoke internalization. Some form of behavior or action is required.

External reality can change without social reality changing, because external reality is individually modeled. This argument allows for the existence of multiple realities (as each is understood from the perspective of the individual). An example of this is if two strangers meet, and thus expand their knowledge of the world by understanding the others' conception of reality. Does this change the total body of knowledge? Is there such a thing? Some knowledge will never be known by all, so can it be considered social knowledge? In summarizing Wittgenstein's propositions, Bloor states that "the facts of meaning are the facts of institutional membership. Meaning is a social phenomenon" (1997: 134).

Can a social environment also be a social structure? Yes, for example, the House of Commons is an environment for voicing political opinion. It is also a structure of society, functioning as a political center. The Internet can also be considered as both a communicative environment, and a social structure.

Societal Differences

The socially accepted normative understanding of reality differs between

societies, and to a lesser extent within societies, including the social understanding of the built environment. For example, our understanding of time is defined by units of measurement (seconds, minutes, hours, days, years), which were themselves defined by physical states (for example, the motion of the earth on its axis, as it completes one rotation in 24 hours); yet the terminology was defined by the social environment. The terminologically driven understanding of the concept of time is specific to a group's common use of that terminology. A recent attempt was proposed to institute an alternative measure of time, Internet time⁷, which deviates from the commonly agreed upon conception of time.

The variability in world-views can be easily attributed to the vast possibility for variation in the socialization process. "Many of the traditionally perceived differences among people of different social 'groups', different stages of socialization, and different levels of authority were supported by the division of people into very different experiential worlds" (Meyrowitz, 1985: 5). Each individual will be exposed to varying elements of reality, dependent upon the social environment within which the individual develops. The social environment has a substantial effect upon what aspects of reality the individual is exposed to, the context of that exposure, and the resultant effects.

Different collections of information, formulated into specific meaning systems, or world views are representative of varying social or cultural gatherings. "Specific agglomerations of 'reality' and 'knowledge' pertain to specific social contexts" (Berger & Luckmann, 1966: 3). Groups of individuals will form like-minded views of reality due to

⁷See <http://wx4u.com/itime.asp>

a commonly understood knowledge base.

Institutional Environment

The foundation of socially constructed knowledge depends largely upon collective bodies of individuals. This applies not only to larger social groups of individuals, but also to sub-groups of individuals within a society, or institutions. “Institutional facts are so called because they require human institutions for their existence” (Searle, 1995: 2). For example, money is, as a physical entity, simply colored paper. The institution of state authority substantiates the assignment of monetary value to that specific type of paper. If Hasbro was to proclaim that Monopoly money will replace ‘real’ money, their proclamation would not be taken seriously unless validated by the government body.

The social creation of knowledge is effected to a significant degree by the formation of groups by individuals in a society. Groups usually serve to represent common interests of individuals, and thus act as collectives of like-minded individuals. “The habitualizations and typifications undertaken in the common life of A and B, formations that until this point still had the quality of *ad hoc* conceptions of two individuals, now become historical institutions” (Berger & Luckmann, 1966: 58). This kind of lobbying power has a significant influence upon how knowledge is formulated. The scope of knowledge is limited by the willingness and ability of the group to explore diverse perspectives.

According to Searle, “the characteristic institutional move, is that form of collective intentionality that constitutes the acceptance, recognition, etc., of phenomenon

as a phenomenon of a higher sort by imposing a collective status and a corresponding function upon it” (1995: 88). Society, in most circumstances has attributed a higher recognition to the institution than to the individual. A collective of individuals focusing on the specialized purpose of the institution can contribute more meaningful interpretations of external reality.

The acknowledgment of institutional power by the collective is largely a result of the unique role that institutions play in the social order. Institutions function as specialized units of collective individuals, tackling a specific task of social conduct. “Collective intentionality assigns a new status to some phenomenon, where that status has an accompanying function that cannot be performed solely in virtue of the intrinsic physical features of the phenomenon in question. This assignment creates a new fact, an institutional fact, a new fact created by human agreement” (Searle, 1995: 46). In the creation of institutions, a new understanding of reality emerges to substantiate their role within society. “In the very evolution of the institution the participants need not be consciously aware of the form of the collective intentionality by which they are imposing functions on objects” (Searle, 1995: 47). Knowledge is actually created simply in the process of creating an institution, as awareness of the functional existence of the institution. Furthermore, the institution is now designated as an authority in the generation of further knowledge particular to the institution’s specialization.

Most of the time this process is not an active part of an individual’s socialization. “For most institutions we simply grow up in a culture where we take the institution for granted” (Searle, 1995: 47). Institutions emerge and disappear in response to changing

conditions in the social environment. With the introduction of the Internet, a number of institutions emerged in direct response to the new communication environment. For example, a regulatory body was required to create standard protocols of exchange, and to insure that the Internet was universally accessible; and service providers emerged to provide individuals with access nodes to the Internet.

Knowledge is created through the institutional substantiation of arrangements of terminology into meaningful representations of objective reality. “We create a new institutional fact, such as marriage, by using an object (or objects) with an existing status-function, such as a sentence, whose existence itself is an institutional fact, to perform a certain type of speech act, the fact of whose performance is yet another institutional fact (Searle, 1995: 84).

Beyond institutional functions in a society, individuals also take on specific roles within a society, which utilizes forms of knowledge specific to that role. “A society’s stock of knowledge is structured in terms of what is generally relevant and what is relevant only to specific roles” (Berger & Luckmann, 1966: 77). This individualistic specialized knowledge (which may nonetheless be founded in institutional bodies) is largely maintained by a lack of general access to the kind of knowledge specific to a specialized role. Educational facilities largely provide the means of accessing specialized knowledge, and in many cases access to these resources is restricted to a few members of society. For example, the knowledge specific to the role of medical doctor is largely restricted only to those individuals who are formally accepted into a medical teaching institution. Although access to literature can be attained, the individuals who understand

and can communicate that understanding to others restrict the sharing of that information to the formal institutional arena.

Role of the Internet

Speaking of pre-Internet technology, Meyrowitz states that “electronic media have increasingly encroached on the situations that take place in physically defined settings. More and more, the form of mediated communication has come to resemble the form of live face-to-face interaction. More and more, media make us ‘direct’ audiences to performances that happen in other places and give us access to audiences that are not physically present” (1985: 7). This observation can be further extended to include users of the Internet as potential participants in the social construction of reality, as opposed to users of other media who are simply an audience.

The Internet is a virtual community which allows individuals to exchange information in a relatively unrestricted manner. The potential exists for the instantaneous transfer of data and information between users. This would imply that the social construction of reality is facilitated by the Internet. The Internet effects the social construction of reality in a manner that is unique from other social environments. “Electronic media affect us not primarily through their content, but by changing the ‘situational geography’ of social life” (Meyrowitz, 1985: 6). The Internet allows for the instant exchange of information between individuals at any disparate geographical location, during any time period, without the time delays traditionally associated with

spanning vast geographical areas.

The instantaneous nature of the information exchange through the Internet effects the social construction of reality in two ways. First, information can be exchanged at a much quicker pace, as institutions or individuals can share information from anywhere in the world. Information can be exchanged much more quickly, and reflected upon, or externalized with greater efficiency and ease. Second, knowledge production can undergo much more vigorous examination before becoming mainstream, as the potential base of individuals from which to draw upon for input into the process is increased.

The events surrounding knowledge production can be applied to both the Internet communication environment, and institutional Intranet environments. An Intranet can function to improve the production of knowledge within an institutional setting to the same degree that the Internet does. Increases in the efficiency of information exchange, and the scope of individuals involved in the process of knowledge production can be improved through a corporate Intranet. In conjunction with the Internet, the institutional development of knowledge has the potential for significant changes.

An Example: XML

Extensible Markup Language, or XML is a new kind of Internet protocol which standardizes information held by different organizations, to improve the exchange of information between disparate groups. In essence, XML is a new set of meanings, symbolized by programming protocols. XML creates a new environment for knowledge by allowing for the universalization or standardization of information (basically the

standardized categorization of information). This makes it possible for the exchange of information between groups in an easier manner, and makes it easier to find information. XML deals with the problem of information overload, which is a common problem of the Internet - too much information is available - and eases the process of how to find information.

XML arose from an institutional body in response to the need for a standard means for organizations to exchange information across the Internet. The set of protocols was developed by a team of experts through processes of externalizing ideas and concepts, and receiving feedback from that output in the process of internalization. This reflexive process continued until a set of symbols was devised which accomplished their current goals, and will continue over time as needs change.

Because of the organization's respect within the ICT community, the protocol is being adopted by many organizations. Derivatives of the protocol are also being developed by other organizations, in response to more specific needs. For example, the international development community is developing a development-specific XML for use amongst development organizations, based on the specifications of XML.

XML will lead to standard ways of categorizing and conceptualizing information, for example a standard term is used to interpret the field within a database which identifies an organization's name. Information retrieved through the XML protocol will therefore be subject to the socially constructed parameters for viewing this kind of information. This particular aspect of the Internet illustrates how the social environment can operate through the Internet to influence how reality is modeled by the individual.

The social environment effects the individual modeling of reality. Different societies effect individual models differently (through different social constructions). The Internet is a distinct social environment which has implications both for how the individual is effected within a particular society, and how the individual is effected in relation to other societies with which information is exchanged through the Internet.

PART III - The Internet

It has thus far been established that individual models of reality are influenced by the social environment through language and the communication environment through which information is exchanged. The following pages will proceed to argue that the Internet is a distinct social space, which therefore has unique effects upon how an individual models reality.

A Distinct Social Space

This thesis is focused on the examination of how a distinct element of the social realm influences an individual's understanding of reality. To gain a clearer understanding of the role of the Internet as a social influence, how the Internet is distinct as a social space must be clearly delineated. Social space involves "the ongoing social construction of the spatial at the level of the social imaginary (collective mythologies, presuppositions) as well as interventions in the landscape (for example the built environment)" (Shields,

1991: 31). This is in essence a public place, conducive to the communicative exchange of information.

The Internet differs from other kinds of social space. Other types of social space include face-to-face environments, and mediated communication environments such as telephone, radio or television. Many other forms of communication medium have allowed for the widespread exchange of information, at the same global levels as does the Internet. Telephone services allow individuals to contact others virtually anywhere in the world, and exchange verbal information. Radio and television medium allow for the transmission of information to the same global span of individuals. However, none of these media allow for the free public exchange of information, in the same manner as a live public forum would. The telephone is limited by the number of simultaneous users, and its auditory capacity. The radio and television are limited by their inability for direct public feedback into the broadcasting of information.

Distinguishing elements of the Internet include: the interactive nature of the Internet as a communication medium; the ability to establish common symbol systems, agreed upon across a variety of cultural contexts (the unique use of language); the ability for participants to create their own identities in ways that cannot be verified; the ability of the Internet to transcend both time and space; the potential capacity of the Internet to replicate full sensory information from a geographically disparate location; and the ability to manipulate symbolic information.

An Interactive Medium

The Internet is distinct as a communication medium, from any other type of medium which a society uses to exchange information. “Unlike broadcast media such as television, radio, or newspapers - which are noninteractive, one-way media involving passive receipt of information - in the networld people can act directly to question, probe, or elaborate on any piece of information that is posted” (Harasim, 1993: 25). This fact distinguishes the Internet as a social environment, or a social space, whereas other forms of medium do not allow for reflective social interactivity, but rather limit the individual to receiving information broadcast through the medium. A recent example of the degree to which individuals can interact on the Internet is the development of Third Voice⁸, which is an application for Microsoft’s Internet Explorer that allows users to post notes on any website. The notes cannot be removed by the website author, and can be freely viewed and commented on by anyone else running the same application.

The interactive nature of the Internet has an effect upon how knowledge is constructed from information. “Perspective becomes the locus of all knowledge because in a virtual world there is nothing to be known apart from the senses. With its filmic eye, virtual reality necessarily construes knowledge as sense perception, not as intelligence of the abstract of the a priori. The virtual traveler defines what he or she knows as what he or she can see and therefore ‘interact’ with.” (Bolter, 1996: 113). Through the ability to interactively engage information, individuals can have a greater degree of control over how information is used to construct reality. Knowledge can be actively formulated

⁸See <http://www.thirdvoice.com/about/>

through challenging incoming information, rather than simply taking it at face value without modifying or interactively substantiating the information.

The Internet “is at once direct while informal - enabling effective and efficient yet non-offensive communication” (Harasim, 1993: 25). Information may thus be more freely exchanged between individuals, as the hesitation to release information⁹ is confounded by the informality of the forum.

Common Set of Symbols

The exchange of information demands a commonly understood set of exchange protocols. “Cyberspace technologies not only constitute a site for new cultural formations, but also affect pre-existing elements of culture” (Strate, Jacobson & Gibson, 1996: 14). The Internet not only facilitates the creation of new protocols of communication, but it demands their creation.

The commonly understood “concept of cyberculture... refers to the unique culture[s] associated with computer-mediated communication (CMC) and online interaction. This includes the emergence of special forms of language and symbols; the development of rituals, conventions, norms, and rules of conduct for CMC” (Strate, Jacobson & Gibson, 1996: 12). The fundamental common symbol system of the Internet

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The unwanted dissemination of information is also more freely accessible, as more information is stored in electronic format. Hackers have proven that no information is beyond the reach of the right individual with the right equipment. Thus, the potential for greater availability of information increases with every bit of information that is archived in electronic format.

is the set of technical protocols which define how information is handled by the individual computers which both send and receive information. For example, HTML is a commonly agreed upon set of symbols which dictates how information is exchanged using the world wide web.

Programming languages are based in the English language. So, the specific symbols, and not a translation of symbols with the same meaning across different languages, are themselves required in order for information to be exchanged across the Internet.

Further to this, common terminology and jargon is used to represent different meanings on the Internet. The smiley face [:)] is a direct product of the Internet, used to communicate emotion. These sign systems are understood by individuals from many different cultures, as a common way to symbolize and interpret information.

In the same manner that books house stores of information, electronic archives represent a storehouse of information. This information extends beyond that of formal published information, to the informal, both as textually presented ideas, and a transcription of dialogue between individuals.

Manipulation of Identity

The Internet, or virtual reality, allows an individual to replace aspects of external reality with abstract conceptions. Boorstin (1978) points out how our non-consensual models of reality have come to overshadow reality itself, as we create false aspirations for a better life founded in things that may be unattainable, but which can be overshadowed

with symbolic representations of more appealing things. (For example, virtual realities in which the user takes on an alternate personality or life - an Internet user becomes someone else on the Internet). It should, however, be noted that even the non-consensual models of reality that individuals create are founded in aspects of reality itself. As was illustrated earlier through the work of Laughlin et al, an individual constructs all knowledge from elements of reality, even that which is a part of the imaginary.

The main point that Boorstin is attempting to illustrate is that “we have become so accustomed to our illusions that we mistake them for reality” (1978: 5-6). It is often the case that the virtually created reality is better than reality itself. For many individuals the “vivid image overshadow[s] pale reality” (Boorstin, 1978: 13). The virtual environment is thus the latest means through which individuals can overcome difficulties in ‘real life’, through creating another ‘virtual life’ with improved circumstances.

In reference to computers in general, Sherry Turkle observes that “one of the most important cultural effects of the computer presence is that the machines are entering into our thinking about ourselves” (1984: 24). Individual consciousness is often framed in reference to computer mediated environments, or computer-based operations. The individual often seems to take on mechanistic characteristics that reify computer systems as constructive elements of knowledge production.

Although the previous arguments may characterize the Internet in a negative manner by detaching the individual from reality, the detached nature of communication through the Internet also has some beneficial characteristics. “Communication in the network is ‘blind’ to vertical hierarchy in social relationships. Charisma, status, and

other physical cues associated with appearance and presentation have less influence because they cannot be (easily) communicated electronically” (Harasim, 1993: 26). The manner in which an individual communicates information through the written word is of much greater significance. Judgements that were made based upon related characteristics, such as status or charisma, are now to a certain extent replaced by judgement of the written word.

Gumpert & Drucker (1996) argue that individuals choose to participate in a virtual communication environment over that of the real world due in large part to an increased sense of security and safety. Individuals are not threatened in a physical sense, as they are physically distant from those with whom they are interacting. Since the virtual communication environment does not demand a shared physical presence, the traditional threats associated with the real world are absent. From this one can also tie in the notion of role-taking in the virtual environment. Because of a lack of physical association between the individual and his or her virtual presence, the individual can mask real world behavioral dispositions with alternate virtual behaviors. In essence, the individual takes on the role of another person.

Transcends Space & Time

The Internet is often heralded as the medium that transcends time and space. “Electronic space is divorced from any idea of physical location” (Strate, Jacobson & Gibson, 1996: 15), or time differences. Individuals can communicate and exchange information from anywhere around the world, at a virtually instant rate of exchange. The

communication environment mimics direct interchange, by allowing for the instant exchange of information between disparate parties, irrespective of time differences.

Harasim uses the term 'anyplace communication' to illustrate that communication through the Internet "transcends geographic barriers to enable people to access the people and resources they need, regardless of where they are located" (1993: 22). With ever increasing improvements to the global communications infrastructure, individuals at any location in the world can have access to the Internet, and to the store of information, resources, and individuals who constitute the Internet as a social sphere. One of the most 'disconnected' environments is continental Africa. The African continent has a history of very poor quality communications infrastructure, which makes the establishment of Internet connections very difficult. However, many initiatives are currently underway to improve the connectivity of the African continent¹⁰, including a number of global satellite networks which promise uninterrupted service to any location.

When the claim is made that the Internet transcends time, the reference is to the ability of individuals anywhere in the world to access information or other individuals at any point in time, or the shifting of time to overcome time differences. The Internet is largely "based on asynchronous, not real-time, communication. The millions of messages that cross the globe each day testify to the power of overcoming time zones and personal schedules for enabling active communication" (Harasim, 1993: 23). The archive of information stored on the Internet is always accessible, providing the information source

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For a complete picture of the state of Internet development in Africa, see <http://www3.sn.apc.org/africa/>

is connected to the Internet. At the same time, individuals can exchange information at any time of day with other individuals around the globe. Because of the stored nature of information exchange (email messages are stored on a computer and accessible to the receiver at his or her convenience), a dialogue can occur during 'regular business hours' between individuals in conflicting time zones.

Replication of Sensory Information

The Internet, in its current state, is limited to the transmission of visual and auditory information (as was examined in the section on sensory information). Other sensory information, such as smell, taste and touch cannot currently be exchanged through the Internet. The significant dependence upon visual channels has proven to be a substantial hindrance towards communicating through the Internet for the blind. However, a recent development by IBM called the "IBM Home Page Reader" (Hattery, 1999:1) is helping the blind to retrieve information over the Internet in an auditory format. Innovative developments are thus progressing to overcome limitations of sensory information available through the Internet.

However, as was previously stated, it is foreseeable that the Internet will be able to accommodate the exchange of all sensory information, to create a complete digital replication of reality. This degree of replication would extend the characteristics of a face-to-face social environment to individuals communicating anywhere in the world.

Although the Internet has not reached this level yet, technological advances indicate that the Internet will eventually encompass these 'features'. This factor is the

most distinguishing characteristic of the Internet as a unique social environment.

Manipulation of the Symbolic Environment

The way in which the Internet is understood by those who use it will also shape the means in which communication takes place on the Internet. Commonly understood conceptions of the Internet are popularized through other forms of medium already socially established, including radio and television. “The vocabulary surrounding new technologies, new uses for old technologies, and the joinder of multiple media is significant as it not only allows us to talk about a phenomenon, but also shapes the perception of the reality being named” (Gumpert & Drucker, 1996: 31). So the uses of the Internet largely emerge out of the socially defined understanding of how the Internet should be used. This common understanding evolves as the users provide feedback into the network, and the uses of the Internet also change based upon new conceptions created through the Internet.

Symbolic information, or information representing aspects of reality, is thus manipulated by the individuals active in exchanging information across the Internet. “The self is no longer constructed as an autonomous, authorial voice; it becomes instead a wandering eye that occupies various perspectives, one after another. This virtual eye knows what it knows not through a capacity for abstract reasoning, but rather through empathy, through the sharing of the ‘point of view’ of the object of knowledge” (Bolter, 1996: 106).

One of the greatest dangers of acquiring information through the Internet, is the

simplification of information, and the resultant loss of information through that process. In the attempt to make information exchange more fluid and globally accessible, “electronic technology fosters the return of iconic writing and the reemergence of the perceptual out of prose” (Bolter, 1996: 111). This simplification of information has the potential to result in a significant loss of knowledge. “Knowledge is a matter of perspective, and so the virtual self is defined through perspective” (Bolter, 1996: 115). Given the limited sensory information that is exchanged through the Internet, the further loss of information through graphical representation could have a significant effect upon the kind of knowledge that is derived from information exchanged through the Internet.

Reflectivity

One final consideration is the fact that the Internet is both a social space and a technical tool. “Networlds are the intersection of social and technical systems” (Harasim, 1993: 29). As noted above, the conception of the tool itself can have an impact upon how that tool is utilized. Largely, this process occurs in the social realm of interest itself. The Internet is molded and changed by users of the Internet, and the social environment evolves and changes with feedback from the users.

A key question to consider is how the technology is utilized to effectively create a social environment. “A networld involves organizing the activities so as to demarcate that group/task from others on the network. In this way, networlds suggest the experience of ‘doing something’, with a certain population or group - be it shopping in an electronic mall open to the public or socializing with an intimate gathering” (Harasim, 1993: 29).

The understanding of how to use particular aspects of the Internet will determine the nature of the information exchange that occurs between users. “Institutions systematically direct individual memory and channel our perceptions into forms compatible with the relations they authorize” (Douglas, 1986: 92).

Although access to the Internet is largely available to anyone, with the potential to be available to anyone around the world, this fact does not insure that equality will prevail on the Internet. “Networks enable but do not guarantee democratic communication. Decisions related to access, cost, design, and control will determine the nature of the social system a network can offer” (Harasim, 1993: 32). With the recent release of Intel’s new Pentium III processor chip, issues have been raised about the privacy of information over the Internet. If users cannot retain anonymity, and information can be readily linked to specific individuals, then part of the distinct nature of the Internet as a communication environment will be compromised.

The essential nature of the effects of the Internet are founded in the advent of computer mediated communication. It is the expansion of computer mediated communication to that of a globally accessible network of computers, through which communication is mediated, that has far reaching societal effects. “The advent of CMC has transformed the act of communication in time and space, merging all forms of electronic communication into one information system, causing abrupt changes in roles and rules for social behavior. By altering the informational characteristics of place, electronic media reshape social situations and social identities” (Meyrowitz, 1985: 117). With the advent of a new forum in which individuals communicate and exchange

information, the foundations of social interaction are effected; which subsequently effects how individuals construct views of the world.

The Effect of the Internet on Individual Models of Reality:

The cognitive modeling of reality, using information acquired through the Internet, is structured and limited by the distinct ways in which information is communicated through the Internet. These effects occur on two levels. First, on the individual level, the Internet effects the individual modeling of information by: effecting the kind of sensory information exchanged; improving access to more information sources; making new information available to the individual; presenting new ways of engaging information; and allowing for new ways of creating non-consensual realities. Second, at a societal level, the Internet effects the social construction of reality, and subsequently the individual modeling of reality by effecting: the process of knowledge production; cross-cultural influences; language; social roles and identities; institutional arrangements; and the understanding of the Internet in a social context.

Effecting Sensory Information

The Internet currently impairs the individual's ability to exchange information, by limiting the type of information that can be exchanged through the Internet. Information is textually or graphically presented for the most part, with the ability to include sounds -

but different from face-to-face oral transmission - and lacks the sensory elements of smell, touch and taste. The kind of information that is derived from the Internet is thus limited. Information will be missing that would normally have been transmitted outside of this communicative medium.

The importance of sensory information was established in the section on sensory engagement. Individual cognitive models are founded upon the engagement of sensory information. The limited nature of sensory information that is transmissible through the Internet limits the models of reality that an individual can construct. The kind of models that are based upon information received through the Internet can be skewed due to missing sensory information. When an individual's model of reality is based upon limited sensory information, it will lack the detail and comprehensiveness that the missing sensory information would otherwise provide.

Conversely, when the Internet advances to encompass the complete digital replication of reality, individuals will be able to access the same quality of sensory information that can be exchanged in person. Individual modeling of reality would be significantly enhanced through the extended range of information exchange available.

Improving Access to Information

The Internet, as a globally accessible social environment exposes the individual to a greater amount of information. A significant amount of information was previously either inaccessible to the individual, or was too difficult for an individual to easily access. For example, the United Nations policy on poverty alleviation would only be accessible

in a few specific locations which had to be physically visited, if not for the Internet.

Access restrictions limit an individual's ability to obtain this information. The Internet allows anyone to access the information at any time of the day, from anywhere in the world.

Individuals are likely to access more information through the Internet than through other means, and thus base their models of reality on greater amounts of information. More randomly accessed information is likely to occur, as individuals 'surf' the web just to see what is out there. More specialized information can also be accessed, and skills can be learnt that were previously restricted to physically grounded formal training environments. Online training sessions make available a store of knowledge and skill-building information that would previously have been inaccessible to many individuals.

The Internet allows for the diffuse exchange of specialized knowledge across boundaries of restriction. Internet-based educational programs are allowing more individuals to access information, and engage individuals who are providing the information. This has the potential to decrease the specialized nature of many forms of knowledge, and allow individuals to broaden their knowledge bases with greater ease. If members of a population base increase and improve the amount of knowledge attained, this will impact upon the knowledge production process itself, as more informed individuals can draw upon a larger store of information to reify the process.

The detached nature of social exchange on the Internet allows an individual to more freely provide information. Individuals are also given more time to reflect upon the kind of information that is exchanged. "Participants can take time to formulate their

ideas into a more composed and thoughtful response, contributing to improved quality of communication” (Harasim, 1993: 24). However, at the same time, the impersonal nature of the Internet allows for easier cloaking or withholding of information, and less personal responsibility is established in the exchange. “The lack of immediate feedback makes it difficult to ascertain whether the receiver has understood the message” (Harasim, 1993: 24). Information exchange is more easily distorted, or misunderstood by the parties involved.

Although the Internet provides an environment for accessing larger volumes of information, the effect of that information upon an individual’s model of reality is questionable. The quality of information is often not easily verifiable, and thus an individual could easily be constructing models of falsified conceptions of external reality.

New Information

Sub-groups within a society tend to stick together, and thus limit themselves to information pertinent to that specific group. The Internet opens up avenues to the stock of knowledge from other social groups. Outside of the Internet, the sharing of information between groups is limited through restrictive means such as social class divisions, or hierarchical structures. The Internet, in its faceless communicative environment, removes many of the boundaries to the free exchange of information between individuals. The uninhibited exchange of information can occur through open communication channels that do not carry the judgmental aspects of other forms of communication.

An individual will thus have the potential to create a more expansive body of knowledge by including the perspectives of individuals from other social backgrounds. Alternative perspectives towards external reality improves the ability of an individual to make better judgements regarding different aspects of external reality. Thus individual models of reality will pass through a more scrutinizing empirical modification cycle.

New Ways of Engaging Information

The Internet, to a large extent, is an interactive social space which allows the user to manipulate information, as an individual can actually engage others in relation to the information contained on the Internet. The ease with which information can be manipulated improves the empirical modification cycle. An improvement to the reification of information changes the ways that individuals will engage information. Individuals can be more selective in deciding the kinds of information which are incorporated into models of reality.

New Ways of Creating Non-Consensual Realities

A non-consensual model of reality is quite easily created through the Internet, as information can be modified and manipulated with relative ease. These models, which are created on the Internet, appear as concrete entities which further substantiates them to the individual. For example, a graphically enhanced gaming world created by Blizzard Entertainment called 'battle.net'¹¹ allows the user to take on the role of a warrior. This

¹¹See [Http://www.battle.net](http://www.battle.net)

gaming environment allows for social interchange between users, while also substantiating the users presence through attributing unique characteristics to each user.

As previously stated, non-consensual models of reality can have very detrimental effects upon how an individual models reality. Through the well substantiated Internet environment, they could pose significant avenues for detachment from external reality, and leave an individual with a model of reality that is substantially deviant from characteristics of external reality.

Process of Knowledge Production

The Internet facilitates the modification and development of a social stock of knowledge. A greater number of people can exchange information, and have access to exchanges of information. Individuals and groups who have a significant impact upon the creation of knowledge can be reached by far more people. More members of a population can play an active role in providing information input to the knowledge creation process. Because of the improvement in access to communication channels, a more significant percentage of a societies' population can effect the kind of knowledge that is accepted by a society.

With a larger number of individuals effecting the process of knowledge production through the Internet, the process is subject to greater scrutiny. According to Harasim, "research has found that the time required to achieve consensus is prolonged, but more people provide input and minority views are voiced more often than in face-to-face situations" (1993: 24). Having a greater diversity of views contributing to

knowledge development should increase the degree to which individuals in a society accept the knowledge, as a greater breadth of individuals are represented.

These changes to the way that knowledge is socially constructed will effect the individual modeling of reality by altering an individual's degree of trust in socially constructed knowledge. An individual could either view socially constructed knowledge from the Internet as highly valid due to a greater degree of input, or less valid due to the lack of formal substantiation.

Cross-Cultural Influences

The Internet will open up communication channels between different societies and cultural groups. This will inevitably effect the ways in which each of those societies understands the world, as exposure to new information leads to the formulation of new knowledge. When elements of a societies' stock of knowledge are challenged by that of another society, the potential exists for significant social change. Chang, Wang and Chen (1994) illustrate how the communication environment is affecting social change in China. In a study which focuses on the news in China, they argue that "knowledge as daily communication in the news becomes an empirical domain into which readers could be socialized. A common source of shared 'experience' with a remote reality is hence systematically and formally created and maintained in everyday life throughout the years" (Chang, Wang & Chen, 1994: 62). Given that the news in China has had a significant impact upon the social construction of reality, the potential impact of the Internet is substantially greater. This factor is evident in the Chinese government's attempts to

regulate the kind of information that is allowed into China through Internet communication channels.

Cross-culturally influenced constructions of reality again introduce alternative perspectives of external reality to the individual. An individual's model of reality will either be reinforced or altered based upon this new perspective, as the information is processed through the empirical modification cycle.

Language

The Internet both spreads the influence of computer-based terminology, and introduces new terminology to the individual. Computer users generally tend to increasingly characterize human traits in terms of computer functions. "As we use computer-based language to describe ourselves and the world around us, the computer's influence works its way into our world view" (Pfaffenberger, 1995: 61). Individuals extend the use of computer-oriented language to associate the terminology with an understanding of the self or society. The Internet, which is a computer-centric social environment, is instrumental in spreading the extent of this associative terminology, simply through social dialogue occurring on the Internet,.

As previously mentioned, the Internet also propagates the addition of new terminology to a language. Terms such as 'cyberspace', 'netizen', or 'cybersociety' all emerged as a result of the Internet. Since language is influential in the individual modeling of reality, these new terms will begin to have an influence on the construction of models of reality. Individuals will incorporate 'cyberspaces', and 'virtual domains'

into their models of reality.

Social Roles & Identities

The Internet also has the potential to impact the nature of individual roles in a society. The Internet creates new roles in a society, specific to the functioning of the Internet, and in support of the use and development of the Internet. For example, website developers emerged in response to the need for specialized technical knowledge pertaining to the task of website creation. These new forms of knowledge emerge in response to societal needs. New forms of knowledge are usually highly specialized, as they have not had the opportunity to diffuse throughout a society (as is apparent in some aspects of Internet programming). However, as this knowledge becomes more important, the specialization of that knowledge decreases (as has already occurred to a large extent with HTML programming).

The Internet also potentially eliminates some roles in a society - for example if a business were to move completely online, the salesperson would be replaced by an automated 'ecommerce' program. The elimination of certain roles, and the knowledge associated with that role effects the social construction of reality. That form of knowledge is no longer valued by a society, and no longer constitutes a component of the social stock of knowledge, except as an element of historical information, which is not necessarily relevant in a contemporary sense.

The Internet changes the behavioral aspects of some roles in society. For example, teachers now use the Internet for long-distance education, which changes the

knowledge required of the teacher, and the manner in which the teacher imparts knowledge to other individuals. The individual's role in society encompasses new forms of knowledge, that in the past were independent of that role. This fusing of knowledge across roles is representative of a decreased specialization of knowledge, or the demand for a wider knowledge base amongst individuals in a society.

An individual's model of reality is required to change in order to accommodate any modifications to social roles. Without modification to a model of reality, discrepancies will exist between external reality and individually modeled reality, and the individual would be unable to function in the modified environment.

Institutional Arrangements

The Internet is a very powerful communication environment in terms of its institutional impact. Inter-organizational communication channels are significant challenges to organizational cooperation and the sharing of knowledge. It is quite often the case that many organizations will be focused on very similar forms of knowledge production, with a significant amount of overlap, however they continue to function independently, unaware of the intentions and outcomes of other organizations. The Internet improves access to organizational bodies of knowledge, by allowing for the online presentation of information. The Internet also facilitates shared bodies of knowledge, which allows organizations with similar stores of information to collect and use that information from a commonly shared source. Communication between individuals using that knowledge is improved with archived user information, and

simplified means of contacting individuals through email messaging. Group mailing lists also allows for the creation of open dialogue spaces between members of disparate groups.

Within an organization, the sharing of information and knowledge production can also benefit from the Internet. Stores of information can be shared on secure Intranets, so knowledge can be dynamically built by multiple individuals in an individualistic manner, while also incorporating team dynamics through Intranet sharing. Improved efficiency within organizations can be attained through the networked sharing of information. The kind of knowledge produced within an institution is likely to be more refined due to improved communication between the members of the organization. Institutional knowledge will be more readily accepted by the larger social group if it has been substantiated by a more diverse group of members from the institution. Improved effectiveness within an institution will be reflected in society by increased confidence in the institution's ability to effectively generate productive forms of knowledge.

The Internet also has an effect upon public exposure to institutional knowledge, and the knowledge creation process within an institution. Firstly, institutional knowledge can be more widely disseminated through the Internet, reaching across geographic and cultural boundaries. Institutional knowledge can be accessed by a greater number of individuals, thus increasing the potential impact of that body of knowledge. From this perspective, the institution plays a more significant, and more independent role in the creation of knowledge. However, the Internet also facilitates public engagement of institutional members, and input from individuals outside of the institution into the

process of knowledge formation. This would infer a movement away from the specialization of knowledge production. Institutions that would exist independent of the awareness of the majority of society, and whose knowledge would diffuse through a society by means of uni-directional medium (as is exemplified by the role of the news in China), becomes less institution-specific, and more institutional-role specific. A greater number of individuals can impact the role of that institution, as the communicative environment is opened up to a wider group of individuals through the Internet.

The improved quality of information emerging under these conditions will lead to individual models of reality that are more significantly influenced by the social environment. If the social environment contains well substantiated information, it is more likely to be adopted by the individual.

Understanding of the Internet in Society

A final impact of the Internet upon the social construction of reality is the manner in which the Internet is understood by the society. The socially accepted understanding of the Internet will change over time, and as that understanding changes, so will the impact of the Internet. The Internet is understood in a variety of ways. It is a communication medium, or a tool for the exchange of information. It is also a 'virtual' communication environment or social space. Both of these conceptions are commonly understood depictions of the Internet. Is the Internet a communication medium, and as Marshall McLuhan argues, also the message? Or is the Internet another form of social space, in which individuals communicate as per normal communicative action? It has been clearly

indicated that communication over the Internet is distinct from communicative behavior through other means. So the nature of the Internet does have an effect upon how communication occurs between individuals, the type of information that is exchanged, and the resultant forms of knowledge that individuals formulate through social engagement. The societal impact of information exchange through the Internet is inherently associated with the socially understood conception of the Internet. The social conception of the Internet will also influence how an individual models reality by dictating the expected protocols of exchanging information through the Internet.

Conclusions:

The central argument of this paper is that the Internet has a significant impact upon how an individual models reality. Premised upon Laughlin et al's theory of neurophenomenology, it was argued that individuals engage sensory information from external reality to construct cognitive models of reality. An individual's model of reality is influenced by both the nature of the sensory information, and the socially constructed interpretations of external reality. The Internet, which is a distinct social environment, has a paradigmatic effect upon the nature of sensory information, and the social interpretation of information, which ultimately limits and structures the individual modeling of reality. At the same time however, the Internet provides opportunities, at both the individual and societal levels, for the enhanced engagement of external reality and subsequent modeling of reality.

So, how does the Internet effect the way an individual understands the world?

The Internet not only changes the world itself, but it also changes the way we understand the world by making us 'see' it differently. In simple terms, it is the equivalent of seeing the world through a lense. The lense alters what you see, and the way you interpret what you see. When a significant number of people are all looking through the lense, it becomes commonly agreed upon that the view through the lense is an accurate depiction of reality. The Internet is changing, and will continue to change the way individuals view reality.

The nature of those changes, however, are not static, as the Internet itself is constantly changing. Since the public adoption of the Internet in the early 1990's, the Internet itself has changed dramatically. It will continue to change over time, and the effect that it has upon how we see the world will change with it.

Change, however, is not a revolutionary concept introduced by the Internet. The most significant effect of the Internet upon how an individual views reality relates to the rate at which change occurs. The Internet facilitates more dynamic change, at an unprecedented pace, which influences a wider range of people. Therefore, the Internet induces changes in an individual's models of reality unlike any previous phenomenon in history.

Structured Modeling

Individual models of reality are structured by the Internet through the need for conformity to protocols of exchange, and through the propensity for the Internet to affect

the social construction of reality and impart a stronger social influence upon the individual modeling of reality.

The conformity of individuals to social standards requires that the individual internalize the values of the social group. Many of the functional requisites for participation on the Internet involve conforming to certain standards of operation. The individual must alter or reinforce conceptions of reality in order to understand the Internet as it is understood by other members of the social group. Emerging and changing social roles require the individual to conform to the standards of the society in order to function in the social sphere. Even participation in non-consensual realities on the Internet requires a degree of conformity to the principles of exchange of the sub-group participating in the specific environment.

The Internet is a social environment that can be instantly accessed by millions of people simultaneously from almost anywhere in the world. The potential influence of a cohesive construction of reality from such a large group applies not just to individuals engaging information through the Internet, but also to the larger social group as information filters into society through social spaces outside of the Internet. With the consensual support of millions of individuals, socially constructed knowledge will spread more quickly and thoroughly throughout a society, and impart a greater degree of influence upon the individual modeling of reality.

Limits on Modeling

Limits are imposed upon the individual modeling of reality through constraints on

the levels of detail and comprehensiveness of information exchanged through the Internet, the overwhelming amount of information available to the individual potentially limiting the functional capacity of the individual, and the lower quality of information circulating on the Internet.

The individual modeling of reality is limited by the context with which information exchanged through the Internet is associated. The individual interpretation of external reality is limited by the context within which information is exchanged. Inaccurate models of reality are likely to develop due to misinterpretations of external reality.

The overwhelming volume of information available to the individual can negatively effect the ability of the individual to function due to information overload. A significant amount of effort is required to sift through irrelevant information in search of quality information. Quality information, however, can be easily lost in the overwhelming volume of information available on the Internet. Given the ease with which information can be added to the Internet, and the lack of any screening bodies, the quality of information is subject to considerable variability.

Individual Opportunities

An increase in the amount of information from which an individual can draw could lead to a more complex construction of reality, which integrates information from a variety of perspectives, and leads to a more accurate depiction of reality. If the individual manages and organizes the information in a systematic manner, the increased amount of

available knowledge serves a positive function in the individual construction of reality.

The Internet effects how an individual fits into society, and the role of the individual in a social context. The Internet presents a more complex world to the individual, through increased access to and sharing of knowledge. This could effect the individual in a variety of ways depending upon the surrounding social structure of which the individual is a part.

The Internet could act to enable the individual, creating opportunities to impact the social environment. Increased levels of connectivity between social groups and individuals creates the potential for an increased understanding of social structure and function. An explicit understanding of the functional social environment subsuming social structure improves the potential for acting upon or within that environment.

A positive impact upon the individual could occur due to the gradual globalization effects that have emerged over the last century, which have conditioned people to see the world as more of a global village. There is, however, a potentially greater negative impact upon older generations who have not been socialized in the modern era, and therefore are struggling with new relations of social conduct emergent from changing environments of communication.

Social Opportunities

As a result of the effect upon individual conceptions of reality, the Internet has the potential to effect change at the societal level. The Internet has the potential to improve social cohesion, increase productivity and efficiency between organizations and

individuals, and remove traditional barriers to the exchange of knowledge and information.

Different perspectives towards reality are most apparent between different cultural groups. The cross-cultural exchange of information and interaction, which is drastically improved through the Internet, could improve cross-cultural and sub-group relations. Through improved communication and the exchange of knowledge between groups with differing perspectives, a decrease in conflicts could occur due to a common understanding of perspectives towards reality.

With an increased understanding of the structure and functioning of society, individuals working in collective organizations will function in a more efficient manner. Improved institutional cooperation and efficiency will emerge as individuals conceive of ways to exchange information and knowledge in a productive form, and decrease inefficiencies in methods of institutional operation. Collaboration between individuals and groups of individuals improves the conditions within a society, as goal attainment and social advancement is driven in an organized and systematic way, with a minimal amount of inefficiency.

The conception of reality from alternative perspectives modifies the functional requirements of a society, which are supported by different social groups. Institutional roles will change as new institutional functions emerge and demand the establishment of new institutions, and as institutional roles disappear. The widespread dissemination of knowledge throughout a society, enabled by the Internet, has created, and will continue to create a large social sector devoted to knowledge production.

Changes in the way that individuals understand reality have the potential to affect social, political and economic barriers to the exchange of knowledge. The Internet presents a means for bypassing barriers to communicative exchange. The removal of these barriers will lead to improved sharing and production of knowledge, and the effective filtering of useful knowledge.

Finally, with an increased number of individuals potentially possessing increased amounts of knowledge, social change will occur more rapidly. Changes in social structure and social relations, which result from alternative conceptions of reality will be exacerbated through improved communication channels created by the Internet.

The Internet is a powerful aspect of society. It is a social space and a technological tool which will change the course of history. The impacts that are evident in the short time since its public adoption have been substantial. Future changes to societies around the world will inevitably occur. The Internet should be understood and used in light of these conclusions, and the expansion of Internet services around the world should consider the potential impact that it has upon the way in which individuals view the world.

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