A conversation with my *friend* technology

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Abstract

ICT does not have the ability to integrate into the daily life of its users owing to its lack of both consensual communication commands and social skill. The daily use of multiple ICTs is imposing dysfunctional communications on its users. This paper highlights the limits and dangers of ICT and focuses on its non-neutral nature. A first-order change is presented in the form of a "Communications Secretary" by introducing a top down approach to ICT centred on the end user's needs. This change is required for humans to take responsibility for their place in the ICT link instead of passively being conditioned by the goals of technology, thus enabling a second-order shift to occur by changing the rules of ICT and hence the system itself.

Introduction

Our relationship with technology mirrors several characteristics of our human relationships. Our communication methods have changed and are changing as advances in technology allow us new ways of expressing ourselves, while also reducing traditional communication methods. One area of interest is in information and communications technology (ICT). We have been warned of the dangers that technology can bring when we treat it as something impartial, as Heidegger stated (1977, p.4):

> Everywhere we remain unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral; for this conception of it, to which today we particularly like to do homage, makes us utterly blind to the essence of technology.

Heidegger's message is summarised by Westphal (2004:24) where he says: "technology threatens to become the only thinking, to become the sole criterion by which we operate". He further states that the great thinkers of the past were philosophers and theologians, while the great minds of today are engineers and entrepreneurs. Our technology based communication methods are largely decided upon by engineers and programmers. Humans are structurally determined and so too are technological devices; however, the structure of ICT can be adjusted at a rate that far exceeds human change. For example, the information processing and buffer limit in ICT can take a 10 fold jump every few years. Soon we are going to be the weakest link in the ICT chain owing to our limit in processing capacity, attention span and time availability.

Our ICT does not have the ability to interface with end users in socially appropriate ways. Our ICT does not have a range of human listening skills that it can adhere to. This raises a number of questions. Can ICT incorporate listening skills, or social skills? Can our ICT become a cooperating member of our human conversations? Is a change in the current functioning of ICT required?

The goals of linguistic communication

Human linguistic communication has a purpose. Austin (1962:138) stated:

> Once we realize that what we have to study is not the sentence but the issuing of an utterance in a speech situation, there can hardly be any longer a possibility of not seeing that stating is performing an act.

These acts have been addressed by Searle (1975:5) whereby he provides five illocutionary points; namely: assertive (these include explanations where the speaker commits to the truth of the information); directive (an attempt to obtain action from the listener by use of requests, orders or commands); commissive (a commitment made by the speaker to perform an action usually in the form

of a promise); expressive (express an emotive response to the current context such as an apology or an acknowledgement), and declarative (bringing about a change in the world by declaring an activity, for example declaring war). For the linguistic communication between people to be effective for any of these five elocutionary points, several factors would need to be addressed: good communication skills such as attentive listening; listening with clear mind; focusing on the current conversation at hand; and attempting to understand the other with the goal of sharing a mutually co-created world of meaning. An awareness of the other is paramount to achieving these goals. Thus, human communication goals include conveying a message to a designated audience; to have this message understood in the way that it was meant; to receive confirmation of this information and to share meaning.

What are the developers' goals for ICT in terms of end users? To accurately and efficiently provide the user with the incoming information as soon as possible, or at least to notify the user that information is awaiting their attention. To provide a return path for the human receiver to respond if they so desire. If the end user needs the information at the time it is presented to him/her, then this is beneficial. If not, it can be a nuisance. Imagine having a conversation with someone who shouted out their thoughts as they entered their mind irrespective of the environmental context. A person, who stated information without regard to what was just said, changed subjects, style and tone continuously without any predictability. This could easily be termed disorganized thinking, which is also a characteristic of disorganized schizophrenia. It is difficult and often frustrating to converse with someone who has disorganized thinking owing to their inability to form coherent logical thoughts constantly leaping across different subjects. Interestingly, that is how our ICT interacts with us when viewed on a collective level. The tacit social rules that moderate human-to-human communication are disregarded in ICT. We are subjected to topic changes, modality and medium changes, irrespective of our current task. The user is at the receiving end of ICT, which for the most part is an open system. This includes telephone calls, emails, texting, faxes, video calls, television/radio programming and advertisements, instant messaging (IM) and social networking. We have minimal control in stopping unknown people from perturbing us. Our ICT is in a constant state of openness (default settings). We are available for perturbation whenever we enable our devices. We are faced with a "catch all" versus "catch none" problem. When my telephone is on, I suddenly become available to anybody who wants to phone me, even people who did not mean to phone me. There is thus a mismatch between the goals of human communication and the goals of ICT.

In terms of Searle's speech acts (1975), a distinction should be highlighted between two humans communicating face-to-face, and the same two humans communicating via ICT (email for example). The ICT forms part of the communication chain but may not be in keeping with the original speech act of the communicating parties. For example, if person A wishes to get person B to perform an action and used a directive speech act such as "get my dry-cleaning before 5pm please!" this may be ignored if person B did not receive that email. The email service does not adhere to the structure of the sender's communication nor the human social skills; rather, it adheres to the goals of ICT. If person B is aware of incoming emails and receives the directive request, they can act on it. However, other emails that have only informative value or phatic expressions (e.g. confirmation of payment notice) too would be presented to person B in the same manner as the directive email. Thus, person B has to rely on the text of the email to determine what action must be taken all the while being perturbed in the same manner for all types of speech acts. The ICT does not adjust its manner of notifying the end user based on the structure or speech acts of the sender's electronic message. Methods of resolving this have been attempted with varying success [see Cohen, Carvalho & Mitchell (2004); Carvalho & Cohen, (2005); Jeong, Lin & Lee, (2009)] but a comprehensive solution is still not readily available in ICT.

Connectivity is becoming the standard in most areas of technical design with inbuilt IP (internet

protocol) commonplace. The fridge and oven that can be directly controlled remotely; the complete control of one's home through automation; and the newly developed subcutaneous insertion of wireless identification tracking modules that some unfortunate individuals have already started to use as a method of counteracting kidnappings, are now present in our society. All these designs have communication as primary goals. As technology is an instrument of human design, this goal of all encompassing informational connectivity is not surprising. Our desire to communicate and share information is central to our life. Conversations provide a context for the human world and become the domain to which we inhabit. Our languaging is our manner of existence (Maturana, 1997). MacIntye (1987) believes that our linguistic domains determine the way we carry out our activities including laws, ethics, rationality, beliefs and values. Our *weltanschauung* or even our cosmic order as he put it is dependent on our linguistic domain. Communication and by extension ICT, encompass more than sending and receiving messages, it marries itself into our existence; our way of doing and being.

Does ICT interrupt us?

We are reminded of Austin's (1962) premise that speech is not merely a passive entity describing things; rather, through speech acts, social reality changes. Conversational interruptions can be defined as a violation of turn-taking rules; deeper intrusions into the current speaker's utterance than overlap, which do not ratify the current speaker's comments or actions; and an activity that disrupts a speaker's turn, or the simultaneous communicating of two or more people (Drummond, 1989). Task interruption too can be included under the topic of interruption and applied according to the same definition. I will now test this definition in terms of ICT as follows:

- Violation of turn-taking rules: Does ICT interrupt a person while they are talking? Yes.
- Overlapping of communication: Does ICT interrupt a person irrespective of whether they are currently talking or busy on a task? Yes
- Deep intrusion: ICT interrupts across multiple modalities, a vibrating ringing cell phone for example - touch, hearing and sight all brought into play by a single event.
- Topic changing without regard: ICT can provide the user with information from many sources simultaneously, for example an email and telephone call.

Interruption can be viewed as intrusive or as cooperative. Murata (1994) has categorized intrusive interruption according to whether it is topic-changing, floor-taking or disagreement making. The modalities used are a factor in how invasive the interruption is. For example, if one is driving a car, reading an email at the same time is considered disruptive. If the email was read out to the driver it is less disruptive. To evaluate the impact of interruption, one would need to determine whether the content of the interruption matches the person's current task or conversation. For example, while I am bathing my baby in the early evening, telephone calls about homeowner insurance are not important to me and thus very disruptive. A nursing sister can tell of the many children who have been injured/drowned owing to this simple harmless communication device.

One problem is that we still need to be contactable by loved ones who are not currently with us. Ideally I do not want to unnecessarily engage with my ICT, rather it should manage this task itself and if it disturbs me, I know that it is for a wanted interruption. The ICT should know what I need, or should have some simple way of allowing me to command it both in a pre-programmable and real-time option in a modality that best suits my current activity. Currently our ICT does not provide us with these options. Winograd's (1987:643) early acknowledgement of this shortfall is still relevant in modern ICT:

> A frequent reason for the failure of computer systems is that they lock in a set of distinctions without provision for evolution. Gradually people find more and more need to work around the system, leading to

complexity and chaos.

Jones (2010:5,7) highlights a further inadequacy and calls for a conversation design:

> The meaningful verbs that prompt action are hidden in today's electronic communications… people are easily overloaded by multiple communication channels. Managing commitment and attention remains the weak link in our technology panorama. A conversation design perspective can enhance our coordination of attention as well as action.

Maturana (1997) stresses the term consensual in explaining existence: Consensual living; consensual emotions; consensual co-ordinations; consensual behaviours; and consensual conversations. The structure of ICT is not readily consensual. It is this structure that needs to be changed. Watzlawick, Weakland, and Fisch (1974) distinguish between first and second order change. Change that occurs within the system and is consistent with the rules of the system is referred to as first-order change. When the rules of the system and hence the system itself is changed, it is termed second-order change. Our ICT should be programmed according to our humaneness and not according to the goals of technology and market forces. It is here that a first-order change is required. Ellul (1964) answers the paragraph question:

> Technique does not confine itself merely to the realm of technical production, but infiltrates every aspect of human existence, and has no time for "inefficiencies" caused by loyalties to family, religion, race, or culture; a society of dumbed-down consumers is absolutely essential to the technological society, which must contain predictable "demographics" in order to ensure the necessary financial returns. The only thing that matters technically is yield... This is the law of technique; this yield can only be obtained by the total mobilization of human beings, body and soul, and this implies the exploitation of all human psychic forces. (p. 324).

Is the technology available for ICT to function in cooperation with human communication styles?

Technological advancements and widespread adoption of ICT has taken place since Winograd and flores's (1986) early communication tool: *The Coordinator*. In their time electronic communication was rare and constrictive often being labelled as "cold" and non-conversational (Jones, 2010). For widespread use of alternative forms of electronic communication, a general agreement needs to take place incorporating the tacit rules of such communication and the acceptance of the associated protocols. Thereafter much improvement ensues to improve the range and functionality for the end users as more role-players can offer the same product/service. However, this is lengthy process. Corporate entities are often the breeding point of these new ICT designs having their own sustainability as primary goals. The information boundary between competing companies is restrictive and competitive with patent lawsuits par for the course. While new improved protocols emerge, they do not necessarily result in a best fit for the consumer owing to the lack of widespread agreement between corporate companies. For example, cell phone handset manufactures until recently had to design different devices to work on the different cellular networks; software packages are designed for different operating systems, the routing software for the forwarding of IP traffic rely on a few competing standards. Academic review and further enhancements are impeded owing to non-disclosure and patent infringements of the new technology.

In terms of the technology, numerous human forms of expression have been integrated into ICT; for example, smartphones can be touch responsive, video and audio enabled, movement - proximity, acceleration, text to speech, and GPS enabled, all of which improve the usability and reduce the

information boundary of the device. Thus, new developments in the interface between man and machine assist in providing a reduced barrier; thus, paving the way for further human [and machine] forms of expression. The boundary between the human and machine should be adequately diffuse for information to flow freely. The better the technology can accept the natural gestures of human expression, the more efficient, encompassing and comfortable the communication between man and machine will be. We should have a choice in how we respond to ICT irrespective of the sender's chosen medium. The ICT must adapt and convert my chosen form of expression to match the chosen form that the original sender required. This achieves a match between transmitter and receiver with both sides opting for their most efficient form of communication. This can reduce the technology gap for many groups of people including people who are blind, deaf, disabled or technology challenged[1]. The video mapping technology used in *Microsoft's Kinect* gaming console allows the player to be the controller owing to its ability to follow the movements of the player by incorporating physical actions as part of the communication method. This technology is now being used in diverse areas. For example, a surgeon in theatre who is performing an operation but needs to view an x-ray or patient file can interface with the computer without physically touching it and breaking the sterile field (Crounse, 2011). Eye/Gaze control has been available in SLR cameras for years but has only recently been added to computer operating systems as a form of communication. In general the technology is available, even with the competitive nature of the ICT business environment; there are sufficient avenues available for the development of an improved ICT platform.

Can an improvement in the design of ICT incorporating the various forms of human expression be undertaken to coincide with the natural patterns of human communication? Should end-users adopt a new manner in dealing with their ICT? The technology, while fragmented, is available for the design of ICT that can maintain cooperative conversations with end users. A change in design conversation and end-user requirement could enable this.

Changing ICT

Our technology advancements provide us with a myriad of high end features, but without integration of these features to provide unified goals, the technology remains bothersome for many owing to its fragmentation. Design proposals that emerge from a purposive design embracing a "design for" ethic of transformation and sustainability should be promoted. Jones (2010) states:

> When designing for a purpose, our "conversation for" that purpose brings it forth, a distinctly different view from a design method perspective. These and other proposals ought to be considered in the emerging reconfigurations of design thinking and practice.

A design approach that takes cognisance of the requirement for knowledge and conversations in multidisciplinary paradigms could improve the ICT usability. The various ICT products and services do not function in isolation; rather, they originate in a context of separate fields each having different applications and knowledge bases. When an ecological approach to the design of ICT is applied, a better result can be achieved. For example, many Mercedes Benz owners kept their old Nokia 6310 series phones purely for its ability to interface directly to the on-board computer of the W210 Benz even though newer phones were available. This connectivity allowed the user to make and receive calls directly from the dashboard controls with the visual information provided in the speedometer console

1 The author is aware of add-on devices/software that assist deaf or blind people, but the point is that it is status quo that all people can use any form of modality in a dynamically changeable manner that was incorporated in the original design of the ICT.

directly in the driver's field of view. The voice was amplified by the already present sound system in the car. Interestingly, most motor vehicles have a radio on board and most people have cell phones, yet few people have that level of visual clarity and connectivity between their phone and car radio to date, even with the introduction of Bluetooth technology. Owing to the then new feature of email on cell phones, business people slowly moved to a new manufacturer forgoing one service for that of another. If the designers from each field continued to cross-pollinate their ideas, further advancements would have been available without a reduction in end user comfort.

Maturana believes that in essence technology should be merely an instrument of humans (Maturana, 1997). This is truer of older times, but with the sophisticated electronic systems now co-existing in our modern world, humans are increasingly more reliant on this technology and soon to be only a link in the technology chain. Devoid of awareness we have little to do but accept and take the place of technology's instrument. Without introducing chaos into the modern world by unplugging our ICT, a solution lies in a change in the structure of ICT: an extension in the range of programming and configuration of ICT that caters for human communication aspects. This rests on the user taking responsibility for their technology needs to incorporate cooperation as a prerequisite for technology design. The ICT algorithms could be adjusted to cater for the user's changing needs and position with respect to their ICT, and in this way the ICT improves its environmental fit. We should become aware of the bigger technological picture or else we sheepishly purchase each advancing technology product unaware of how these products are going to fit into our future and the collective technological culture, yet we are primed and now already conditioned to the ethic of technological efficiency.

Are we thus powerless in the evolution of technology? Is Kelly (2010) correct when he places technology or more correctly *technium* as the 7th Kingdom? We do however have the ability to buy or refrain from buying the technology we do not like. However, if the status quo does not provide us with all the features we require, we will simply choose the closest match in order to still have some of the functionality. In the automobile industry there was a time when the status quo was transportation from A to B without extensive safety features. We would buy the product that best met our other needs even without comprehensive safety features. We do not refrain from car purchases altogether for the lack of airbags, rear safety belts, ABS, as in the 1980's this was not status quo across all vehicles. Thus, we do not wait until the manufacturers provide us with what we want before we make our purchase of essential items. Rather we accept and cooperate with their designs in the most part as we cannot readily manufacture a car ourselves, yet we still require the primary service of transport. The same is true for ICT. Owing to economic forces, I require email, text, voice calling and thus accept the status quo, which means I accept the ICT's social skills or lack thereof. Regulation of an industry can steer the design goals as was accomplished with the introduction of vehicle emission controls in certain countries. The evolution of technology does not have to be a negative force as we are part of it, we align it and we extend and accelerate it. Thus, it is we who decide upon the evolution of our technology (Kelly, 2010). However, complacency in accepting ICT without awareness of our own needs, without challenging the designers, the manufacturers and the industry regulatory bodies, may leave us without a strong voice in the near future.

The communications secretary (CS)

In Schael's (1998:102) research of computer supported cooperative work systems applied to small and large sized organisations, he summarised several important points. These points form the backbone of a competent computer communication system and include:

- The ability to distribute and easily select messages. This requires a communication filter that can route and rank communications according to priority, based on the users pre-defines rules.
- Linking of messages to a conversation: The system should provide contextual information to the end user allowing the user to determine where in the conversation the message arises from.
- Record and classification of conversations/messages: The messages should be classified according to their status (e.g., still in negotiation, request provided, closed conversation etc.)
- Model coordination. The system should support centralised coordination functionality and hierarchical features.
- Classify and select recurrent processes: The coordination system must create categories for actions such as speech acts.

Schael's summary was written in the context of organisational workflows; however, it too can be applied to other areas of ICS. With his points in mind, a communications system now termed the communication secretary (CS) is presented. The CS attempts to provide a new level of information gathering that allows for all the different communications managed by a single synchronised software which configures the entire user's ICT portfolio from any ICT access point allowing for centralised coordination. The user learns a single program and can obtain his desired form of communication over this interface configured like a personal secretary. The user can decide on what modality to use for any of the communications and this can be changed ad-hoc by commanding the secretary to perform this task. The software is configured according to the needs of its users and can communicate with them. The CS is a product of the requirements of the individual user; it is is a customizable program that has social and listening skill configuration options. The CS is configured with "on the fly" commands that can overwrite current instructions based on the different speech acts of the user. The software has an instruction set that allows the user to configure it. The CS has the range of responses and actions that when linked together form the unique user's ICT social skill requirement. In this way the CS achieves an increased social skill based on its end user's past behaviours. This is similar to how the text to speech works on a GPS unit. The computer GPS voice is not programmed with every street name; rather it has each letter and combination vowel sound and uses pronunciation rules to generate speech. The CS has the range of responses and communication skill options that can be grouped to form a desired behaviour from the ICT. The CS then commands the various ICT according to the user's requirements.

The CS would start out with minimal communication filtering and is in the catch all and notify state. The use of positive feedback whereby the user can teach the CS the desired filtering response is an ongoing process, similar to how people learn each other's likes and dislikes through instruction and trial and error. Thus, behaviours are fed back into the CS and saved for future reference. For example, when an unknown caller telephones me I usually enquire who the person is and what they need from me. The CS can now perform that service as I set the rule of response for unknown callers. For this to be achieved the rules and boundaries are to be set. The CS is programmed to learn the client's rules by allowing for real-time configuration updating. These rules must be followed by the CS in order for the CS to perform the desired responses. The rules form the boundaries of the system. The system however is a product of the client and the CS's range of programming available. Thus, it is important that the CS have a large behaviour repertoire (configurable options) that can suit the different communication styles of different people. For example, some people enjoy openness in their ICT and only require mild filtering of information sharing and information perturbances. On the other hand, many people prefer a system of communication that is mostly closed, similarly to how friends and family systems operate; a communication system with a fixed identity that is not easily changed from outside perturbances. In this case the CS would find the best fit as it should have the ability to maintain the client's communication identity while acting on his behalf. The CS would have a goal of co-creating a

negentrophic state whereby the wanted information is allowed to reach the client and all the unwanted information that threatens to interfere with the client's current context kept aside or diverted for the time being.

Currently my ICT can take a message or divert incoming information, but it cannot do it while I am still connected. Thus, the diverting or message taking is not a new feature of ICT, rather the option of having this process achieved across multiple devices relying on a central rule set is not available. To enable this feature my devices would need to be interconnected to each other which in turn would reduce their fragmentation. This is already possible with IP phones, Ethernet enabled TVs and wireless mobile devices. Using the TCP/IP (Transmission Control Protocol/Internet Protocol) networking standard, my CS can configure the devices in a slave mode. The computer networking field relies on the OSI (Open Systems Interconnection) model to characterise and standardise networking protocols and functions. There are 7 layers within OSI which are hierarchically set one above the other. The CS would sit mainly in and above layer 7. It is not simply a software package that is loaded onto a computerised device; it is ideally also to become part of the TCP/IP stack. It will need to have some of its functionality directly interfaced into the application layer 7 specifically for the finding of available communication partners and use of protocols. Layer 7 may be referred to as application but should not be misunderstood as a software package like a web browser, which is actually above layer 7 (Odom & Knott, 2006:347). The CS would be involved in synchronising ICT devices and determining resource availability with closest communication partners near the user, thus allowing for routing. It would then determine the format of the data to which the device must render it. For example, if I am watching TV yet I am waiting for a specific call, this call should be routed to my TV via wifi or Ethernet and a pop-up notice (similar to RSS feeds) can show me the call is waiting. No other communication or emails et cetera would be allowed to perturb me according to my current profile on my CS. Thus, my CS should be able to intercept all incoming communications rank and route it according to its learnt profile according to my requirement. If for example an incoming landline call is acknowledged while I am on a Skype call, my CS would be notified of this and decide the level of importance and either route the call to my currently used ICT (in this case Skype), or take a message without perturbing me at all. The synchronising of ICT is an important feature of the CS. This can be achieved through incorporating the already present continuous status updating that occurs on the network layer. The CS uses this data to determine which device is currently being used to determine the location of the user. The CS would still however be accessible from any device. The device that is currently in use can take on master status with all others set to slave for any instructions to be descended down. The CS would have its management system for authenticating hosts and their attributes similarly to how Microsoft's Active Directory functions.

The CS needs to reach a balance between morphostatus and morphogenesis for the system to be healthy. This means that the system should adapt to many perturbances owing to its ability to call up past behaviours set by the user and replicate responses based on those learnt encounters. However, the secretary should not become completely stable as it should not become an automated device that does not learn new responses. The patterns of interaction between the CS and the client determine the CS's future responses to incoming communications. The degree of automation adopted by the CS is set by the end user. Thus, the CS alone cannot determine all the responses; rather the responses are uniquely determined by the *interaction* and coupling between the CS and the client and their drift through their daily activities. Over time the CS would have absorbed hundreds of filtering commands from the user and learnt extensive routing options. These profiles are now the user's requirement for his/her ICT across all platforms which can be loaded or synchronised onto any TCP/IP enabled device. This works similarly to how push email is available on any exchange enabled device that has user

credentials. If I purchase a new VoIP phone, I could load the CS profile onto the device and the device becomes my instrument according to my communication skill goals. The device is immediately customised to act according to my needs (including having a list of my latest contacts) and I am not subjected to the status quo of the manufacturer's structurally limited default programmed idea of ICT. Rather, I condition my ICT according to my humanness of buffer limits, time management and attention requirements. Further, I can store my CS on a removable memory device and load it onto another host. If I go on vacation, I can either synchronise my mobile phone with all the other ICT devices on loan to me during my stay, or manually load it onto the device. The world of ICT becomes a world of awaiting hosts that can be configured to co-operate with its unique users.

An elementary setup could be as follows. My ICT should receive all communications designated for me as usual; however, I should be able to tell my ICT (let us use a cell phone) to what degree of importance I will allow into my communication space. Thus, the ICT must only interrupt according to the pre-set rating system. All my emails et cetera will still be collected, it is just that my phone will only notify me of the ones I want according to my requirements of what is important at certain times. When adjusting the profile, the CS could prompt the user with filtering options. There could be settings of *completely open* – receive all communications; *moderately busy* – only known callers and emails to be presented to me according to rules already set; *busy*- only close friends and family, and *do not disturb* – emergency information only. The sender's ICT should know how to deal with my ICT and together they determine if the message is to be let through (with the help of TCP/IP). Thus, there is an awareness of the sender's needs as well as the receiver's. A mutual acknowledgement of social skill and language acts applied to determine if co-operation will be achieved. I want to be able to leave my cell phone on overnight and not have marketing emails waking me. Thus, I can be available to those who need me in an emergency during the night. There are currently settings to turn off emails at certain times, or divert the phone but that falls into the catch all or catch none problem. A rating system could be implemented. If the caller is prompted with an option to state to what degree of urgency they require the receiver (or based on what illocutionary act), then this can be brought to the attention of the receiver. Thus, if I telephone my wife and she is busy and her ICT prompts me with an option of importance, I can decide if I want to continue with my telephone call or if I will call again later based on. The ICT is now offering the role that is similar to a secretary. The secretary can determine if it is important enough to disturb her boss while also acknowledging the speech acts of the sender based on the receiver's set profile for that moment.

In summation, I want to communicate with my ICT as though it was an employee who I can train. My ICT should know when, how and over what medium to interrupt me. I want to converse with my ICT in socially appropriate ways and teach it how to manage my communication requirements for all my devices across all platforms incorporating many forms of expression.

Concluding Remarks

We have accepted the position of technology as centre stage in many of our social encounters; for example, "just wait while I answer this telephone call"; "can I help you, oops my phone is ringing, I must attend to my cell phone (even though I may not know who is calling)." We know that interrupting people while they are talking impedes listening. Many of our communication devices do just this; they train us to attend to the interruptions; they condition us to their content, even if it is just for a moment. Our ICT does not dynamically adjust its method of communicating with its user. It does not have the ability to filter out the information we require over the unwanted information in an effective integrated manner across multiple platforms. Imagine having a different set of road rules for every town? For every

communications device I need to learn its software. The goal of all these devices relates to communication which makes it an obvious step to unify them into a simplified communications hub, namely the CS.

Technology has become a new conversational domain whereby our patterns of communication are subject to the limits of technological innovation. We will need to learn how to efficiently manage our ICT and we may need to set new communication rules. For technology to become an integrated well-liked member in our human society, it would need to incorporate some human factors in communication. I proposed an integrated holistic approach relying on the ability to customise ICT according to the personality of each user through the CS.

A first-order change is required in the ICT system itself. Further, a change in position from the tacitly accepting user complying with the rules of technology, to the user who is aware of his responsibility in the man-machine relationship. A second-order change is thus required. This will be in keeping with a return to technology being used as an instrument as Maturana (1997) originally called for: an instrument that is in cooperation with our humanness.

One of the most influential psychologists in therapeutic listening said “In our technological society, people’s behaviour can be shaped, even without their knowledge or approval” (Rogers, 1980:140). We need to make sure that we are shaping technology around our humanness or else Heidegger and Ellul’s warning regarding technology may become status quo, if it isn’t already.

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