

Think Before You Link: Controlling Ubiquitous Availability

Karen Renaud

University of Glasgow | karen@dcs.gla.ac.uk

Judith Ramsay

University of West Scotland | judith.ramsay@uws.ac.uk

Mario Hair

University of West Scotland | mario.hair@uws.ac.uk

The survival of the species depends upon communication between its members. The mechanisms underlying human communication have long been scrutinized, from Darwin's examination of the role of emotion, to later studies related to the ways in which people form attachments. Of particular interest are studies about how individuals and groups communicate. Whole journals are dedicated to human communication and communication disorders.

Although survival is dependent upon communication, as a species, we need to do more than simply survive. Maslow attempted to enhance understanding of this with his proposal of a number of "human needs," which start off with the most basic, physiological needs and progress to self-actualization at the apex of the pyramid. Only once a person feels that Maslow's lower-level needs have been satisfied can they enjoy an "enhanced survival status," in which those aspects of daily existence that preoccupy them are of a "higher

order." The kinds of issues that might preoccupy people at the highest level are: which computer to buy, whether to go on holiday, or whether to purchase an iPhone. Communication, according to Maslow's model, becomes a need to be satisfied only when physiological and safety and security needs have been satisfied. However, experience tells us that people have the need to communicate even when their lower-order needs are not satisfied, as evidenced by the behavior of people in concentration camps. It is also well known that solitary confinement is the most dreaded form of discipline in prison. We argue that despite interaction being such a basic need, the glut of communication media has overloaded us to such an extent that the biggest luxury of all is to choose not to interact with others.

The explosion in communication in the past few years has been facilitated by a number of innovations such as affordable mobile phones, social networking sites, email, and BlackBerries. Based on our observations of

emailers, we forecast a gradual withdrawal from electronic communication based on the fact that people obviously are unable to be sensible about their email interactions. For example, continually thinking about and monitoring email, just in case something interesting has arrived, is not productive. This is exacerbated by the multitude of other information we have to deal with on a daily basis as part of our working day.

Several studies have foreshadowed this. Nonnecke and Preece found that the very great majority of the members of online technology and health support groups were non-active members ("lurkers") [1]. In this context, people are refraining from interacting; however, we have not observed this kind of restraint when it comes to emailing behavior. What we have found is that emailing behavior is often characterized by a kind of compulsion, with emailers not even being aware of how often they engage with their email client.

Individuals need to retreat from interaction, to engage in a

[1] Nonnecke, B. and J. Preece. "Lurker Demographics: Counting the Silent." Working paper, CHI 2000, The Hague, Netherlands, 2000.

process of self-renewal and reinvigoration so that they can cope with a hectic and demanding world. The need for solitude is undisputed [2]. Naturally, people differ and have varying solitude requirements. Unfortunately, not everyone feels empowered to make the decision not to interact. There are institutional imperatives for communicating. Email comes with your PC at work; you can access it from home, and the pressure to check email is strong, ubiquitous, and attentionally demanding. Yet how many job descriptions explicitly mention the need to engage with email, and how often is time formally allocated to it?

Problem No. 1: Unbidden Email-Related Thoughts, a “Recipient Generated” Phenomenon

Email usage requires us to invest a significant amount of time and energy in reading, acting upon, making decisions about, remembering, and removing emails. This takes place in one of two ways. First, in the same way that alcohol researchers investigate “alcohol-related cognitions,” we posit the existence of “email related thoughts” —unbidden thoughts that compel the individual user to check email. This reflects the wider debate about whether Internet addiction should be recognized as a clinical phenomenon. Email was initially the plaything of academics and technophiles, but it has quickly become the de-facto communications technology of choice for business, academia, and personal users. It is ubiquitous: available at work, at home, from “third party” locations such as Internet cafes, from mobile devices such as BlackBerries

or mobile phones. Many of us check our email first thing in the morning, regularly throughout the day, last thing at night, and during our holidays. Research that we have conducted over the past three years signals an urgent need to develop protocols for managing interpersonal interaction if the power of these communication technologies to distract, interrupt, and pressurize is to be controlled.

Although the clear benefits of email are apparent (person-to-person, personalizable, almost instantaneous, archivable, with ability to attach text and pictures, etc.) the research that our team has conducted over the past three years has indicated that user engagement with interaction technologies has now reached the high watermark. Partly, we suspect that the problem is their misuse. How much of the content of what we communicate is really truly necessary? Often, we communicate simply because it makes us feel connected. What we call small talk or gossip is the vitally important grease of social life, but not every technology and every context, for example workplace email, is appropriate for this type of interaction.

Problem No. 2: Unbidden Email Interruptions, a “Sender Generated” Phenomenon

Unlike paper correspondence or telephone calls, email is unusual in that it imposes a disproportionate amount of the cost related to communicating onto the recipient, rather than requiring the sender to carry the bulk of the cost. Some senders scatter emails as a sower scatters seed—transferring responsi-

bility for tasks, informing those who have little interest in the topic of current developments, generally filling up inboxes with impunity and with no thought as to the consequences for those who have to spend valuable time dealing with the emails. The phrase “the tyranny of email” is not so much humorous as it is tragic. Even worse are the senders who bully, terminate relationships, and deliver bad news by email. It is too easy to send email; it aids and abets the avoidance of independent thinking and problem solving. A commonly cited example in academia is the case of the student who reaches for a staff member’s email address before reaching for a textbook.

Many people have their email client running in the background while they work on other tasks. Anecdotal reports have suggested that growing pressure to send, respond, and manage increasing volumes of email has a potentially deleterious effect upon users. By tracking the onscreen application-related behaviors of six volunteers, we found that individuals switched between other applications and their email client continuously. In fact, what appeared to be happening was a monitoring of incoming email, which superseded all other work. Continuous monitoring of emails reflects a high level of email-related thoughts, which may impact task performance. Unbidden email interruptions, on the other hand, make demands upon both limited memory and attentional resources and time. Famously, in 1956, Miller ascertained that people can hold only a little less or a little more than seven

[2] Cramer, K. M. and R. P. Lake. “The Preference for Solitude Scale: Psychometric properties and factor structure.” *Personality and Individual Differences* 24, no. 2 (February 1998): 192-99.



separate items of information in mind (in what is termed “working memory,” which is where information currently being used is temporarily held). Recently, Cowan has suggested that this number might be as low as four items [3]. Working memory, being so limited, is very vulnerable to interruptions. When an email interrupts an ongoing task, the person focuses his or her attentional resources in an either “alternating” or “simultaneous” manner to the email. These modes of operation are far less effective than focused attention. Just how aware are email users of the price they are paying?

When we asked people around the world about their experi-

ences of email, the findings were revealing: a worrying mismatch between what we had seen happens (study one) and what users are aware of (study two) [4]. We concluded that while users believe themselves to be in control of their email, they appear to be in its thrall—mesmerized by the idea of incoming emails awaiting perusal.

We developed a typology of orientations to email [5]. Three dimensions emerged: relaxed, driven, and stressed. Those individuals with the orientation that we labeled driven also appear to have low self-esteem. In other words, those who suffer from lower self-esteem are impelled to engage with their email more than those individuals who have

higher self-esteem. Those with a stressed orientation find email more distracting than other forms of asynchronous communication such as letters or instant messaging, for example. This makes sense if we accept that the positive side of email is that we are in semi-continuous contact with other people, often like-minded, often geographically disparate. We are communicating. Now, human beings as a species need to communicate to survive, but, even so, communication is more important to some than to others. Those with low self-esteem often define themselves in terms of their acceptance by others; they desperately need the communication fix. Those with higher self-

[3] Cowan, N. “The magical number 4 in short-term memory: A reconsideration of mental storage capacity.” *Behavioral and Brain Sciences* 24, no. 1 (2001): 87-114.

[4] Renaud, K.V., M. Hair, and J. Ramsay. “You’ve got email. Shall I deal with it now?” *International Journal of Human-computer Interaction* 21, no. 3 (2006): 313-332.

[5] Hair, M., K. V. Renaud, and J. Ramsay. “The Influence of Self-esteem and Locus of Control on Perceived Email-related Stress.” *Computers in Human Behaviour* 23 no. 6 (2007): 2791-2803.

esteem are more self-contained; they can take it or leave it.

Solutions: Technical or Societal?

Solutions can be either technical or societal. In the case of email, we believe that both are required, that a two-pronged approach is the only viable approach to the problem. For example, current email clients such as Microsoft Outlook allow users to request notification upon arrival of every email. This appears to encourage and facilitate the monitoring behavior we observed, which, in light of our research findings, is detrimental. There is plenty of evidence as to the negative effects of continuous interruptions which cause stress and exhaustion and interfere with a person's ability to complete other tasks. On the other hand, a business-wide email policy could state that employees need not monitor their email all day but policy makers are likely to find that email is so enticing that this kind of policy is not adhered to, and might well prove counter-productive if enforced. So, for example, the implementation of email-free Fridays by companies such as Intel may simply result in most of Monday being spent catching up. Part of the problem stems from the fact that email is still an evolving communication technology. Unlike the well-established norms related to dealing with letters, memos, and phone calls, we are still in the infancy of developing email etiquette. This leads to people having their own idiosyncratic email behaviors. Some people archive every email, others delete religiously, still others let their inbox fill to overflowing. Some reply

immediately, some when they get the chance, and others will purposely not reply so as not to seem too eager! Others deliberately delay opening emails when they suspect the sender receives "read receipts." This latter behavior is a clear case of the attempt to manage sender expectations, further confirming sender-recipient inequity. Moreover, everything and anyone can appear in your inbox, and at any time. No one inbox has the same traffic on any two days, meaning that we are constantly upgrading our email behavior.

What Can You Do About It?

Having considered our research evidence, we believe that the long-term solution will be a mixture of better business-wide communication policies linked to better software. However, in the meantime, how can the individual users take ownership of the problem, since they are the ones who are primarily affected? The first step is for users to acknowledge that communication technologies are not only a great and good thing but can also be a tyrant, and to understand that this can not only interfere with their ability to do their jobs, but also exacerbate their stress levels, increase their blood pressure, and cause them to be more tired and irritable than necessary. In the case of email, users should stand up (metaphorically) and admit "my name is Jo and I'm an email addict." Once they have acknowledged this, they need to implement a personal email management policy.

Communication technologies can work either for or against you—helping you to be more productive or fragmenting your

day into tiny slices of activity, interspersed with frequent interactions with others, leaving you exhausted and unfulfilled by the end of the day. At the moment, only you can act to master your communication behavior and bring it under control. Communication technologies need to be tools, subjugated and made to work for you rather than being controlling tyrants, preventing you from enjoying your day and invading your leisure hours. Finally, linking with others is positive and conducive to happy and healthy relationships but it is very important for you to think before you link!



ABOUT THE AUTHORS

Dr. Karen Renaud is a senior lecturer in the department of computing science at the University of Glasgow. She has a strong software engineering background and has an interest in making technology usable and useful to end-users. She is particularly interested in the use of email within organizations and the effects of ubiquitous connectivity on individual employees.



Dr. Judith Ramsay is a lecturer in the division of psychology at the University of the West of Scotland. She is a chartered psychologist specializing in the psychology of human-computer interaction. At home in interdisciplinary teams, her research is driven by the need to understand individual differences in Internet-based communication.



Mario Hair is a statistics lecturer at the University of West of Scotland and is also an active researcher and consultant within the Statistics Consultancy Unit based at the university. He is a fellow of the Royal Statistical Society. His research interests include the use of mediated communication technologies and the psychology of survey response.