Chapter XXXXXVII
Instant Messaging as a Hypermedium in the Making

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ABSTRACT

The recent rise of Instant Messaging systems as a centerpiece of online communication has brought with it many questions about the role this new medium will play in the communicative sphere. As the medium has evolved, it has grown to subsume many traditional communication technologies, merging their individual capabilities. In this chapter, a cross-section of popular and established technologies is examined and a strata of affordances introduced, describing the media's capacity for tasks enabled through their message transport. Through this framework the modern medium of Instant Messaging is compared against these other technologies in terms of the affordances offered by each and the argument presented that IM is evolving to subsume many of the traditional communicative mediums into a single communications hub, or hypermedium.

INTRODUCTION

Over the last few years, Instant Messaging has slowly but surely gained ground as one of the most predominate forms of online communication. The popular press has trumpeted each new feature introduced to IM that brings it into the domain of yet another medium. With the latest push into IM-based telephony, pundits have predicted that IM will become the new hub of communication, with all the user's communicative needs handled by a single medium (Stone, 2005).

Instant Messaging was arguably born to the world on December 19, 1973, with the release of PLATO TERM-talk at the University of Illinois (Dear, 2002). Constrained by the computer technology of its time, it was a primitive text-only medium with stringent limitations. While a number of derivative systems were developed in the following two decades, all forced the sender to "make 'blind' calls, hoping that the recipient [was] available to take the call…[since] such systems lack[ed] presence-awareness (Greene & Mahony, 2004, p. 55). The introduction of the ICQ network in 1996 heralded the dawn of the

modern IM system, in which users were able to "see" who was available for communicating (Greene & Mahony, 2004).

In its text-only form, IM is "betwixt and between" other forms of communication, "represent[ing] a new liminality in communication because it resides inside the cracks that separate and permeate written and oral forms of communication (Davey et al., n.d., p. 9). The medium lacks even a common terminology as users describe themselves as "chatting … typing … writing … talking … speaking … saying" (Davey et al., n.d., p. 9). Paradoxially, it is also "an intrinsically visual medium, something that is antithetical to our traditional conception of oral (and aural) communication" (Davey et al., n.d., p. 9).

Instant Messaging is often employed in a highly-multitasking environment. Twenty percent of IM users "say they do something else off their computer, such as talk on the phone or watch television virtually every time they are Instant Messaging," while 30% multitask at least some of the time (Shiu & Lenhart, 2004, p. iv). This multitasking has made IM extremely popular with teenage users (Grinter & Palen, 2002). Software vendors have added video and audio channels in an attempt to convince users to perform more of their multitasking within the same medium.

Away messages, in particular, have become an important method of communication. While profiles tend to be long-term expressions of a user's online identity, away messages represent a mechanism to express short-term information in broadcast form. Once simple messages proclaiming "I am away from my computer right now," away messages have evolved into a parallel communications channel used "to initiate contact or help plan a social event, to send messages to particular other people, [or] to convey personal information about the message poster…" (Shiu & Lenhart, 2004, p. 9). Of adult IM users, 18% use away messages "every day or almost everyday" (Shiu & Lenhart, 2004, p. 9). It is interesting to note that 12% of users use their away messages to "switch communication media by posting a phone number where they can be reached" (Shiu & Lenhart, 2004, p. 9), a fact not lost on IM vendors rushing to add new telephony features to their offerings.

BACKGROUND

In order to examine the role IM plays in the greater sphere of communication, it is necessary to compare it against existing media and the affordances they offer. A cross-section of technologies must be introduced, representing many of the common media in use today, together with emergent ones just beginning to take over certain communicative genres. The conveyance of thought lies at the root of communication, and a medium extends that conveyance by supporting it across time or space, or by enhancing it in selective ways.

To evaluate the ways in which these media influence or enhance the communicative process, a set of *affordances* is introduced. These range from basic characteristics, like whether it enables asynchronous or synchronous conversations, to derived measures like its capacity for community building. Through this stratum of media and affordances, the role of each in the communicative process may be thoroughly examined.

With the rise of the Internet, a greater percentage of communications are occurring in this new venue. According to a 2004 Pew report, "on a typical day…some 70 million American adults logged onto the Internet to use e-mail, get news…and engage in countless other activities" (Lenhart, Horrigan, & Fallows, 2004, p. 58). While "for the most part, the online world mirrors the offline world…people bring to the Internet the activities, interests, and behaviors that preoccupied them before the Web existed," the study notes the Internet "has also enabled new kinds of activities that no one ever dreamed of doing before–certainly not in the way people are do-

ing them now" (Lenhart, Horrigan, & Fallows, 2004, p. 58). The rise of online communication technologies is reflected in the set of technologies selected for this study.

Telephony has been a driving force in the modern communications revolution. At the time of its invention, the telephone was essentially an upgraded telegraph, using the same transmission principles to transmit speech sounds rather than Morse Code. In this regard, it may be thought of as a fidelity enhancement that launched a new medium. VoIP is an emerging form of telephony that offers a concept of mobility mediated by physical access stations rather than portable cell phones carried with the user at all times. The line between VoIP and classical telephony is increasingly being blurred with the introduction of new stand-alone VoIP devices that resemble traditional telephones, but plug into the Internet rather than the telephone network. An effective bridge between the two genres of telephony, VoIP is a crucial enabling technology in the subsumption of telephony by IM. A recent study suggests that by 2009, "a third of people in the US and Europe will abandon phone lines in favour of wireless and broadband telephony [or VoIP]" (*Internet phone calls*, 2005).

E-mail was the "killer app" that transformed the primitive early network into the form it has today. By 1973, just a year after its introduction, 75% of all network traffic was e-mail (Zakon, 2006). Today, "email has become a central organizing mechanism for both work and recreation. It is a repository for to-do lists, family communication, hobbies, and workflow" (Isbell, Amento, Whittaker, Bell, & Helfman, 2002, p. 1). As the network grew, the need for archival broadcast communications grew with it and NCSA Mosiac launched the modern Web with a cross-platform graphical browser that enhanced the text-only Web with inline images and media. With the rise of Wikis, bulletin boards, and blogs in popular communication, these specialized Web sites are examined as distinct media. Finally, video con-

ferencing, with its visual extension of telephony, offers perhaps the highest fidelity mediated communications mechanism of today.

MAIN FOCUS

As noted nearly half a century ago by Marshall McLuhan, "it is only too typical that the 'content' of any medium blinds us to [its] character" (McLuhan, 1964, p. 9). In other words, when evaluating a medium, the focus often becomes on the messages transmitted by the medium, rather than the capabilities it enables. By evaluating the media presented in this chapter through a common set of affordances, the interplay and overlap between them becomes more apparent. In order to effectively compare the selected cross-section of mediums introduced here, a framework of enabling capabilities must be established, onto which the technologies may be placed to compare their capacity to support each. Through such a structure of important communicative capabilities, or "affordances," and the capacity of each medium to support those affordances, the mediums may be compared by their character rather than their content.

Just as the technologies selected represent a cross-section of mediums in popular or emergent use today, the strata of affordances chosen was designed to cover the diversity of metrics by which mediums may be measured. Taken together, these measures illustrate the multifaceted evaluation process used by communicators when selecting which medium to use for any given discourse.

Asynchronous vs. Synchronous Communication

Asynchronous communication is often associated with interactivity, "a communication characteristic which is greatest when discursive role assignment and turn-taking are nonautomatic or nearly so" (Jaffe, 1994). An interactive me-

dium implies "conversationality, a blurring in the roles of sender and receiver towards serving some shared information goal [where] no single or collective participant has absolute power over the transmission and reception of messages on the part of others" (Jaffe, 1994). However, asynchronous mediums do not require the recipient to be available at the same time as the sender, which was touted as one of the strong selling points of early network messaging systems such as e-mail (Licklider & Vezza, 1978).

Blogs, bulletin boards, e-mail, Web sites, and wikis are all asynchronous mediums. The author creates content that is disseminated through the medium, but there is significant delay before the recipient receives the message and can respond. In some cases, such as e-mail, rapid message transference can approximate the interactivity of IM, but the transport incurs higher overhead and therefore does not encourage such use.

Cellular phone, telephone, VoIP, and video conferencing are exclusively synchronous mediums. Both sender and receiver must be present before communication can occur. The use of voice mail can lend some degree of asynchronous capacity to these mediums, but, again, the overhead incurred discourages such use.

IM supports both transfer models in that traditional chat sessions are synchronous, with sender and receiver communicating in tandem. However, as long as the recipient's IM client is logged into the network, messages can be sent that the recipient will receive when she returns to the computer, mimicking the asynchrony of e-mail. Through its "away" messages, IM also supports asynchronous one-way communication. In both cases, both sender and receiver's IM clients must be logged onto the network, but the communicator need not be physically present to receive the message or send the away note. In this way, IM blends some of the persistence capabilities of other mediums.

Community

Communications mediums play a critical role in community building, allowing groups of people to share their common interests across distance. Archival broadcast mediums like Web sites allow communities to recruit new members or keep existing members abreast of new developments, while bidirectional mediums allow communities to interact across distance and time.

Marhsall McLuhan (1964) once commented that:

If the work of the city is the remaking or translating of man into a more suitable form … then might not our current translation of our entire lives into the spiritual form of information seem to make of the entire globe … a single consciousness (p. 61)?

This "intensification of the world community to its present expression" (Kappelman, 2001) marked a recognition of the importance of new forms of electronic communication to bridge the globe and bring geographically separate communities together to form a new "global village." When the Internet is taken as a whole, it may be viewed as a single collaborative space. According to a 2004 Pew Report, "44% of U.S. Internet users have contributed their thoughts … to the online world" (Lenhart, Horrigan, & Fallows, 2004, p. 1) The incredible size and diversity of interests on the Web means that it does not function as a single cohesive community, but rather as an umbrella under which more focused communities coexist and communicate.

Web sites form a primary means of broadcast communication for many communities, with individual sites fostering collaboration through information sharing. Wikis, bulletin boards and blogs permit groups of communicators to collaboratively maintain an online information space, supporting community building by enabling the broadcast of information related to the community. They can assist recruitment efforts by "getting

the word out" and bolster membership retainment by keeping members abreast of the latest activities of the community. Bidirectional media such as telephony, e-mail, Instant Messaging, letters, and video conferencing help communities discuss emerging issues. Many-to-many media such as e-mail lists or bulletin boards allow the community to communicate within itself, increasing its strength by bringing its members closer together.

Empowerment

Empowerment through communications takes on many forms. The fidelity of a medium may be used to mask certain racial or gender characteristics, while broadcast capabilities allow traditionally underrepresented groups to make their message heard at a much larger scale. Community-building technologies often play a pivotal role in empowerment by strengthening ties within underrepresented communities; by allowing such communities to band together with one voice, their message is more likely to be heard. None of the media examined in this chapter were specifically developed as empowerment mechanisms, yet underrepresented communities have found ways to employ them in ways that advance their needs.

A high fidelity transport, such as video conferencing or telephony, transmits an entire array of nonverbal and verbal cues that add depth to the linguistically-defined message being conveyed. The ability to discern race and gender from these mediums, however, can sometimes have a negative effect, as recipients may have conscious or subconscious biases that can impact the communicative process. In these cases, a lower fidelity transport like the text-only medium of e-mail or IM can enable these communicators to overcome such bias and have their message received on equal footing (Gibbons, 2002). This empowerment was reflected in a recent legal review that suggested "email mediation may also address fairness and political concerns over the physical, psychological,

and economic dangers of mediation to women, the poor, and the less powerful" (Gibbons, Kennedy, & Gibbs, 2002, p. 6).

Technologies that allow for the creation of online identity offer significant empowerment capacity. Using the freedom of online identity creation, communicators are able to create a communicative identity which may be distinct from physical identity (Donath, 1998). Users are given the opportunity to forge their own notion of "self" within this new community, putting aside physical characteristics such as race or gender that can become overly defining in a biased world (Macfadyen, n.d.).

The use of electronic file formats for message transference can itself provide crucial benefits to the underrepresented. Electronic files may be copied without limit and without any loss of fidelity, no matter how many generations removed from the original. High-quality copying technologies used in the print world to mass-produce or mass-copy materials are extremely expensive. As Schiller (2007, p. 141) notes, "the declining cost of digital production continues to open avenues of expression to individuals and groups effectively barred from the commercial mass media."

IM is a unique medium in that it allows the fidelity of transport to be controlled. Communicators wishing to circumvent race or gender-based bias in conversations may choose to avoid the video and audio capabilities of the medium and use only text chat, while at other times using the maximum transmission capabilities of the medium when there are no fears of bias. Together with the electronic format of IM messages and the low cost of use, Instant Messaging services are a unique tool for empowerment through communicative media.

Fidelity

Media Richness Theory introduces the concept of evaluating media by "the number of cues and channels utilized, personalization, and language

variety" (Daft & Lengel, 1986, p. 560). The fidelity of a communications medium describes the extent to which it reproduces the complete sensory transfer of a face-to-face conversation. The highest-fidelity communications medium is face-to-face (Daft & Lengel, 1986). This unbrokered channel is a raw transmission between the communicators, allowing all five senses to participate in the exchange. It "provides the sender with constant feedback on how well the receiver is hearing and understanding the message," and "when body language, facial expressions, or the receiver's verbal cues indicate confusion or disinterest, the sender can change his/her approach, repeat or clarify the message, or ask for feedback" (Adams, 1996, p. 2).

In this chapter, three categories of fidelity are examined: *Tone, Senses Conveyed*, and *Location*. The importance of tone has been well documented, as together with "head nods, smiles, eye contact, distance … and other nonverbal behavior [it] give[s] speakers and listeners information they can use to regulate, modify, and control exchanges" (Kiesler, Siegel, & McGuire, 1984, p. 1125). The number of senses targeted by a given medium has a direct impact on the fidelity of that medium and the number of channels of information it is able to carry. Finally, location is presented as a nontraditional sensory input that, while not often considered a component of communicative fidelity, is nevertheless an important piece of "being there," and is surprisingly strongly represented by many of the mediums.

Tone

Text-only mediums lack the ability to convey tone except through language choice. Natural audio cues such as voice inflection cannot be transmitted through this modality and so indications of tone must be translated into a textual representation. In many cases, tone can be appropriately conveyed through the choice of wording for a message. However, given the complexity of human emo-

tional responses, not all emotional responses can be faithfully represented by word connotations, and so many text-only mediums utilize "emoticons" as a tone replacement device, replacing the face-to-face nonverbal cues of prosody and facial expressiveness (Rezabeck & Cochenour, 1995). Emoticons, formally introduced into e-mail by Scott Fahlman on September 19, 1982, (Jones, 2002) are "visual cues formed from ordinary typographical symbols that when read sideways represent feelings or emotions," (Rezabeck & Cochenour, 1998, as cited in Walther & Addario, 2001) often simply called "smileys."

While Rezabeck and Cochenour (1995) found that emoticons were not heavily used in e-mail, their appearance in Instant Messaging is well-documented (Shiu & Lenhart, 2004).

Telephony and video conferencing have tone provided automatically through their audio channel. The use of tone-replacement devices in bulletin boards, blogs, Web sites, and Wikis is heavily dependant on the formality of the particular publication. A corporate Web site, for example, will rarely make use of emoticons and will instead rely on word connotations as a tone replacement device, while personalized publications may use emoticons (Huffaker & Calvert, 2005).

Senses Conveyed

The written word does not permit any of the five senses other than sight to be directly affected. Rather, descriptive words are used to invoke graphical imagery to place the reader within the story, and connotative words are used to evoke emotional responses to pivotal events or characters.

The highest fidelity medium of those evaluated is video conferencing, which offers both video and audio channels, allowing verbal and nonverbal cues to be transmitted from sender to receiver in real-time. Telephone, cellular phone, and VoIP form the next layer of fidelity, offering audio transport. Informal blogs, bulletin boards,

e-mails, Web sites, and Wikis form yet another concentric layer, and finally formal blogs, bulletin boards, e-mails, Web sites, and Wikis form the lowest fidelity transports of this group (Daft & Lengel, 1986). It should be noted that modern blogs, bulletin boards, e-mails, Web sites, and Wikis can all contain multimedia content, and so they are not strictly limited to a text-only transport, but the static nature of that transport limits its utility in conveying nonverbal cues.

While originally a text-only medium, Instant Messenger programs have evolved in recent years, with the latest versions "expand[ing] their repertoire to include file-sharing, playing games, streaming audio and video, avatar management, and sending text messages to cell phones" (Shiu & Lenhart, 2004, p. 2). In this way, IM has moved beyond the visual-only sensory appeal to engage more of the user's senses and in more direct ways. A modern IM client is a unique medium in many ways, offering a continuum of fidelity from video conferencing down to the formal written word. Communicators have the control to determine what level of fidelity to use for each message they wish to transport across this medium.

Location

While not part of the classic five senses, location is important for recreating the sense of "being there." There has been considerable work in the field of "spatial services" (Virrantaus et al., 2001) and "spatially-aware messaging," much of it focusing on the notion of being able to create annotations associated with a specific region in space. These "virtual PostIt™ notes" can be made accessible only to certain people, or to anyone. For example, upon leaving a restaurant, one can virtually post a review of the food available to anyone passing by (Espinoza et al., 2001). With the rise of "spatially aware email," a project in Japan uses GIS-enabled camera phones to create a georeferenced image database, where users can snap photos and send them to a central service

that uses the image's GPS coordinates to place it within space (Ueda, Nakanishi, Matsukawa, & Motoe, 2004). The importance of location in communication has even led to the creation of place in virtual environments, giving additional context to the communications they facilitate. For example, in text-based virtual environments, "users communicate using text only, and sense of location and navigation is achieved through textual description and commands" (Whittaker, Isaacs, & O'Day, 1997).

Formal vs. Informal Communication

Formality in communication has long been used to compare media (Kraut, Fish, Root, & Chalfonte, 1990). Media Richness Theory states that informal communication has a higher capacity for information transference in that nonverbal cues, such as emotional response and tone, are conveyed along with the message. Hence, the more a medium supports informal communication, the richer message transfer it supports and the higher its fidelity.

Bidirectional media such as telephony, e-mail, IM, and video conferencing may be formal or informal, depending on the intended audience. Blogs that fall along the lines of news sites rather than "public diaries" will often use formal language, while more personalized blogs will inherit the level of formality of their audience.

The rise of electronic technologies has largely blurred the once-clear expectations for formal and informal language use. In a 1978 reflection on the invention of e-mail, Joseph Licklider wrote:

in an [email] message, one could write tersely and type imperfectly, even to an older person in a superior position and even to a person one did not know very well, and the recipient took no offense. The formality and perfection [of the] typed letter did not become associated with network messages, probably because the network was so much faster, so much more like the telephone (p. 1331).

Identity/Mobility

Although arisen in a context of mobility, technologies such as cellular phones and access-anywhere electronic mail accounts like Hotmail™ have forged a new form of permanence. Communicative technologies require a known address for the recipient so that the message can be delivered. Historically, communicative addresses have been tied to physical addresses; every time a communicator changed physical location, the new address had to be conveyed to all senders so that future messages were routed correctly. Cellular phones were designed to free users from the tethers of having to be in a specific location to receive calls, while online technologies by their very nature are ethereal, with the Internet making physical location irrelevant for communication. In this new society, change of physical location no longer requires a change of contact information, as the person's communicative address has become separated from his or her physical address.

The electronic era has had profound effects on identity and its expression, which arise out of the freedom of informal communication, of one's ability to freely express one's thoughts and feelings. Telephony, e-mail, IM chat, and video conferencing do not truly enable the creation of identity due to the ethereality of the medium. An archival medium is ultimately required to allow a message to be constant and viewable at any time, much as a physical identity is a constant feature of the "real world." Informal archival broadcast technologies, such as Blogs, bulletin boards, Web sites, and Wikis, allow users to create online "homesteads," where passing users may stop to learn more about the user through his or her online identity. The user's online identity may be completely different from the user's physical identity (Donath, 1998), a source of empowerment for underrepresented communities (Macfadyen, n.d.). The bidirectionality supported by blogs, bulletin boards and wikis allows a more social atmosphere to emerge around the formation

of identity. Friends, family, and even complete strangers can interact with the communicator via this "homestead." However, the fact that visitors must alter the appearance of that online expression of identity in order to interact with the sender presents a strongly different social paradigm from what users find in real life.

Instant Messenger, on the other hand, presents a dichotomy of expression through the use of away messages/profiles and chat. A user's away message and profile "enable users to establish a continuing sense of social 'presence'… [even in] his or her physical absence from the computer" (Baron, Squires, Tench, & Thompson, forthcoming), which is subsequently used for bidirectional communication. IM has become almost a virtual homestead, with the user able to tailor his online presence with "customizable backgrounds, environments, emoticons… and avatars..." (Shiu & Lenhart, 2004, p. 1). Indeed, the ability to use these capabilities to create "online personas" is often exploited in separating online tasks, with users utilizing different profiles or screen names to "communicate with different people from different parts of their lives," with 17% of Instant Messaging users "us[ing] different Instant Messaging handles for school, work and personal use" (Shiu & Lenhart, 2004, p. 8). Other forms of bidirectional communication, such as e-mail, lack this "presence." In fact, the power of "presence" is so strong with IM systems that (Grinter & Palen, 2002):

[users] reported being annoyed by IM non-users and complained of the inconvenience and additional work required to contact them. Moreover, non-users' lack of IM presence rendered them even somewhat invisible, or at least missing-in-action (p. 23).

The buddy list feature of IM creates the notion of a virtual space in which the user can enter, look around to see who is in the space at the same time, and choose to communicate with anyone who is

currently available. The fact that buddy lists are private to each user suggests that a buddy list creates the virtual equivalent of a homestead. It is easy for the user to determine which buddies are available at that moment for chatting. Security features of the messaging software allow the user to determine whether anyone in the IM network can contact her, or only those on the buddy list. Users can choose to block those outside their buddy lists, or they can receive a confirmation message whenever a new user attempts contact.

The gradual merger between cell phone text messaging and IM is forging an interesting bond between identity and mobility. Several popular IM programs now run on cell phones and their desktop versions support sending messages to users on cell text messaging networks. The fact that IM software now runs on portable devices like cellphones means that users can now take these virtual identities with them "on the go" and communicate using their new forms of "self" at any time.

Multitransport

Multitransport describes the concept of encoding a message in one medium and transporting it over another. A medium's ability to support multitransport is its ability to deliver other mediums across the same transport. An example is the attachment of a movie file to an e-mail. Multitransport is an important concept in evaluating communications mediums, in that it describes the ability of a medium to "take over" for another medium by transporting its enhanced cues over the same communications stream.

Cellular phones, VoIP, and standard telephony, being audio-only mediums, are unable to provide for effective transport of other modalities. Current generation blogs, bulletin boards, e-mails, IMs, Web sites, and Wikis support HTML, a computer language that provides support for the inclusion of multimedia content within the presentation stream of a textual Web page. Video conferenc-ing provides both visual and audible transport channels, with multitransport needed only to convey textual information across the channel. While textual content is not directly supported, messages may be encoded into the visual stream of the channel (such as onscreen captioning), or read aloud and converted to the spoken word.

Instant Messaging actually supports several different forms of multitransport. IM systems provide file transfer capability, allowing any packaged content to be transferred between two machines, regardless of type. This allows archived video or audio content, for example, to be transported. For live conversations, IM systems provide audio and video chat in addition to their text modalities, allowing all three mediums to be used under the umbrella of a single transport.

Persistance

There are three main classes of communicative persistence: Append Only, Update Only, and Ephemeral. Append-only mediums retain a record of previous messages, with the recipient seeing a list of every sent message. In an update-only medium, each new message replaces the previous message; the new message is held by the medium as its output until replaced. In an ephemeral medium, each message is lost the moment it is delivered.

From its humble beginnings as "simply a file with a particular name" (Tomlinson, n.d., para. 3), e-mail has always been an archival medium. An early mailbox's "only special property was its protection which only allowed other users to append to the file…they could write more material onto the end of the mailbox, but they couldn't read or overwrite what was already there" (Tomlin-son, n.d., para. 3). This meant that when a user "e-mailed" another user, that new message was simply appended to the list of existing "e-mails" to be read at the recipient's leisure (Tomlinson, n.d.). While the recipient could choose to delete the message, contemporary e-mail users tend to

archive much of their mail (Isbell et al., 2002) and a significant amount of effort has been placed into designing modern e-mail clients to help manage and categorize these large message collections.

The introduction of e-mail presented the world with a somewhat unique metaphor of communications. Vannevar Bush's *As We May Think*, (1945) presented the idea of the Vocoder, which allowed the scientist to walk about his lab, recording all that he said. This freed scientist to spend his time on discovery, with documentation handled by machine. E-mail provided an embodiment of this concept, in that every message sent through the medium was automatically archived. While physical letters provided a similar automatic archival mechanism, messages were only saved on the recipient's end, instead of the bidirectional archival of e-mail. The rapid message transfer of e-mail also made automatically-archiving media more accessible, and in turn, increased their usage. The role of e-mail as the lifeblood of corporate communication has been underscored by measures such as the Sarbanes-Oxley Act of 2002 that requires corporations to archive all e-mail correspondence.

The Web is an intrinsically archived medium by virtue of supporting an update-only communications style. The message posted to a Web site is displayed until a new message is sent, at which point the new takes the place of the old. To counter the loss of materials from the Web, a service known as the Internet Archive was created in 1996 to provide a permanent record of the content of the Web. It continually monitors as much of the Web as it can discover and maintains an archive of every Web page, along with a history of every change to that site. Despite a page having changed many times in the course of its life, this service allows a user to view each iteration. The power of archival is illustrated in the following August 2005 guidelines of the United States Internal Revenue Service (*Retail Industry ATG*, 2005) for auditing online retail:

Search the Internet Archives Wayback Machine… This search will allow the examiner to determine what the website contained during the year of examination as well as historical information. What were the product lines that were being sold online during the year of audit? Are those product sales included in income (Internet Investigative Tools)?

Wikis supplement the update-only modality of Web pages with a permanent archival record, much like a localized version of the Internet Archive. Bulletin boards, blogs, and IM sessions use an append-only modality, but with Instant Messaging, the contents of a given conversation lasts only until the end of that session. When a new communication session is started with the same user, the contents of the previous session is lost, unless the user enables the archival capabilities of new IM clients. IM away messages and profiles are an update-only medium, giving IM the distinction of supporting communication in all three categories. Telephony and video conferencing are both ephemeral mediums, where each message is lost the moment it is sent.

Transport Mechanisms

The ability of a medium to connect communicators together in different configurations is a critical deciding factor in determining whether to employ it in support of a given discourse. There are three primary transport mechanisms: one-to-one, one-to-many, and many-to-many. One-to-one transport is also known as point-to-point, in which two users converse with each other. One-to-many transport, or broadcast, involves a single user sending a message to a large number of recipients. Many-to-many transport describes a communications strategy in which a large group of users converse with each other in ad-hoc fashion. It describes a bidirectional case of one-to-many communication, in which anyone in the group may send messages, rather than only a single

designee. Many-to-many transport is crucial to community building, helping to strengthen connections between community members.

Blogs and Web sites are one-to-many mediums. Their primary use is to facilitate a single user communicating with a large audience. Bulletin boards and Wikis are examples of many-to-many communication in that they are designed to provide a public forum that is editable by a large group.

Telephony, e-mail, IM, and video conferencing may fit into any of the three categories, depending on the specific use. While telephone calls are typically between just two people, conference calls are used to bring groups of people together into a single forum. E-mails are typically one-to-one, but restricted mailing lists allow one-to-many communication and open mailing lists allow anyone on the list to send messages to the entire list, enabling many-to-many. Instant Messaging offers similar support, with private and group messaging offering one-to-one and many-to-many communication, and away messages and IM profiles offering one-to-many transport.

FUTURE TRENDS

To appropriate a famous phrase, Instant Messaging appears on a path to become the "one medium to rule them all." The fact that IM tools have become so versatile in their ability to extend the traditional text chat with video and audio streams, attach files, and interact with other media, suggests that they have become a *hub of communication*. Moreover, the layered nature of their capability, with video building on audio building on a textual base, allows users to choose how many layers to enable. Communicators desiring maximal fidelity in transmission can enable all of the layers, while those wishing to mask certain personal attributes, such as race or gender, can choose a lower-fidelity transport *using the same medium*.

Instant Messaging has evolved from its primitive text-only roots to a multifaceted medium that provides significant support of each of the affordances detailed in this chapter. It appears to be on a developmental course to incorporate the capabilities of each communications technology in popular or emergent use today. As the online world becomes more pervasive, the number of mediums and affordances supported or subsumed by IM continues to grow. While some mediums support individual affordances better than IM, its ability to provide such strong coverage across the entire continuum of affordances lends considerable support to those who claim it is becoming the centerpiece of the new digital society.

CONCLUSION

Given that Instant Messaging technology is evolving to subsume other forms of online communicative mediums, what directions does this suggest for the use of this new "hypermedium?" There is an ongoing debate in communication as to whether the ancestors of a medium should be considered the definition of their progeny. If, for example, e-mail is a direct descendant of the physical letter, should it be employed in the same contexts and used in the same way? The Social Shaping of Technology (SST) is a school of thought that studies how "a range of social and economic… factors, pattern… the development and use of technologies" (Williams, 1997, Introduction). It examines both the "content of technologies and the detailed processes of innovation" to suggest ways that innovative technology might be applied based on lessons learned from the past (Williams, 1997, Part 1). SST also explores the notion of "expectation and experience," and the "creation of expectations about the performance and utility of future technologies [as] a pre-requisite for attracting investment" (Williams, 1997, Part 2). In doing so, it touches on the need to relate any new technology to existing familiar ones to spur adoption (Williams, 1997). In the case of Instant Messaging, such a school of thought suggests that

by studying the uses of media subsumed by IM, it is possible to learn more about the possible uses of this fused medium.

Opposing this philosophy are those who argue that "the curse of all new media…[is] the curse of being judged by the standards of the old" (McCloud, 1994, p. 151). A medium derived from previous media will necessarily inherit many of the same users at first, believing it will naturally carry their same communicative behaviors in an enhanced fashion. However, when media are created out of a sudden fusion of other forms, rather than evolutionary expansion, it is unclear whether the result merely supports a concatenation of the subsumed media, or whether something profoundly new is created. Only time will tell, as the new "hypermedium" of Instant Messaging continues to expand into new communicative contexts. However, as IM grows to subsume even more media, perhaps the wisdom of Ecclesiastes may yield some insight, as "what has been will be again, what has been done will be done again; there is nothing new under the sun" (Ecclesiastes 1:9).

ACKNOWLEDGEMENTS

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KEY TERMS

Affordances: Describe a medium's capacity for tasks enabled through its message transport.

Instant Messaging: A communications medium born of text-only roots that has slowly become a *hypermedium*.

Multitransport: The concept of encoding a message in one medium and transporting it over another.

Identity: How an individual represents him or herself as a communicator.

Hypermedium: A medium that has evolved to incorporate the capabilities of competing media.

Persistence: The length of time, once sent, that a message remains available.

Mobility: The severing of physical ties between communicative and physical addresses; the user's ability to maintain multiple identities and switch between them at will.