NEW MEDIA AND SOCIETY
1999, 1(1), 24–32.

Artifacts and paradoxes in new media

RONALD E. RICE
School of Communication, Information & Library Studies, Rutgers University, Newark

What are some of the ways that new media differ from traditional media (including face-to-face) in their configurations of constraints and processes available to those who wish to communicate? And what are some conceptual challenges associated with those configurations?

New media are (currently) new to the extent that they combine (1) computing (which allows processing of content, such as retrieval through associations of words or other indices, and structuring of communication,

such as conversational threads in newsgroups), (2) telecommunication networks (which allow access and connectibility to diverse and otherwise distant other people and content), and (3) digitization of content (which allows transference across distribution networks, reprocessibility of the content as data, and integration and presentation of multiple modes such as text, audio and video). These components alter the possible combinations of four basic dimensions of attributes associated with any medium, including face-to-face and traditional media: constraints, bandwidth, interactivity, and network architectures (Rice, 1987). My general argument here consists of two primary propositions:

(1) Although all media are to some extent social constructions, many of the comparisons involving new media implicitly refer to artifactual or idealized notions of interpersonal communication. By 'artifact' I mean the second definition of the word in Webster's dictionary, a product of artificial character due to extraneous (as human) agency – here, a particular form of social construction.

(2) We would do far better by studying attributes of media in general, and paradoxes raised by new and familiar media, than by confounding each medium with different sets of specific attributes, and therefore with unidirectionally positive or negative uses and outcomes, ignoring potential paradoxes. By 'confounding', I mean it as used in traditional research design: not controlling for two or more distinct influences, so that any analysis will misleadingly attribute all differences to one or the other influence, instead of separating out their unique influences.

ARTIFACTS

Media are of course imbued with the social conventions, expectations, practices, constraints and other influences of their technological, historic, economic, social, political and cultural times (Rice, 1987; Rice and Gattiker, 1999). This is most obvious during the initial development and diffusion of new media, when people try to fit new media into old conventions, or develop new ones. So, for instance, discussions of electronic mail are still often concerned with the development of norms for address, style, debate, and intimacy.

This lesson is much harder to learn and apply when we refer to the more traditional media, where such issues are typically taken-for-granted and thus deeply embedded in daily practice, if not invisible. For example, there is a remarkably small body of social science (as opposed to technical or economic) research on the telephone. One reason, I would argue, is largely because it was already firmly in place in social meanings, behavior and contexts before communication research came along: there was nothing obvious to study.

I would extend this point to include media that appear somehow less vulnerable to critics of communication technologies – for example the book. Consider our notions of how books are displayed and accessed, both by themselves and in libraries. Because the content (words, numbers, pictures) is conveyed on the physical marker (paper pages), both reading a book and finding it in library stacks are sequential access procedures (Chang and Rice, 1993). In the days of the card catalog, this sequential nature of the book was replicated by the card (in a few different sequences, such as author or subject). There are, in fact, very few retrieval/access points to both books and their content, until they are managed in electronic form. Further, books are, after all, also technologies.

Thus, much of what we feel is natural about traditional media (such as face-to-face interaction, or a book) is in fact an artifact of a wide variety of components, such as material production, access mechanisms, social conventions, etc., available and developed at the time. Over time, and with continued use and structuration, this artifact becomes idealized, so that primarily positive social aspects are associated with familiar media, especially interpersonal communication. This idealization becomes fairly impervious to evidence especially in contrast to alternate conceptualizations and forms of media. This is not to say that there is no critique of prior media forms; just that the traditional, especially personal, media, tend to be invoked in their artifactual, idealized form when new media are critiqued. Jensen (1990) makes a related argument, showing that as media develop, they are often analyzed on the basis of a few, idealized metaphors (art, information, education), instead of on their full range of uses and possibilities.

For example, extend this notion to unmediated communication. Face-to-face communication has been largely immune from the kinds of critiques applied to new media. Perhaps it is because the social practices of interpersonal communication are so much more firmly embedded in our socialization and culture, but some writers still project onto face-to-face communication a sort of romantic, mythic, idealized notion. Thus, interpersonal communication is still privileged and much of its artifactual nature has yet to be uncovered.

Now, I am *not* saying that social practices, etc., of interpersonal communication are not widely studied or debated, etc. What I am saying is that new media are often compared to, or critiqued from, a privileged, artifactual, idealized notion of interpersonal communication.

For another example, when we confront debates about the technological intrusions and ways of negotiating new services provided through the intelligent network such as caller ID or desktop video conferencing systems, we forget that the social calling card was a medium that represented a major social convention that solved similar problems in pre-telephone days. As Marvin (1988) points out, this is one of the reasons that initial telephone

subscribers (well-to-do members of dense social circles with a critical mass of people wanting to talk with each other) opposed public telephones, aghast at letting the rabble join the network and perhaps invade the privacy of their homes without prior screening. Why new media services, such as call screening, or ways of managing computer-based visual glances into your office is any more or less ethical, or irritating, than the pre-electronic media practice of sending one's card into a house one wanted to visit has not, to my knowledge, been explored.

So, certainly one important agenda for research on new media and society is to identify and better understand the artifactual nature of familiar communication so that we do not prejudice our understandings of new media. There are, of course, examples of such an approach. Griffith and Northcraft (1994) explicitly separated out media features from media in a controlled experiment comparing conditions of anonymity/identification across paper and pencil/email. Their study emphasized implications of differences in the same feature both between and across media. More generally, Nass and Mason (1990) develop a very general typology of media variables that constitute the 'black box' usually used to conceptualize a particular medium. Meyrowitz carefully develops a typology of three media literacies (content, media grammar, and medium literacies). My argument here would be considered one of 'medium literacy': media as environments of relatively fixed characteristics, both shared and unique, for communication and social processes. I have reviewed other approaches to this issue of conceptually distinguishing media from features (Rice, 1987, 1992). Indeed, this understanding will uncover a variety of paradoxes in the uses, evaluations, and critiques of both traditional and new media.

PARADOXES

New technologies, as well as traditional media, have 'dual lives' of positive and negative consequences (de Sola Pool, 1983), are implicated in the 'duality of technology and structure' (Orlikowski, 1992; Rice and Gattiker, 1999), may be adapted in use up to material limits (DeSanctis and Poole, 1994) and have multiple levels and time horizons of effects (Sproull and Kiesler, 1991). What are some of the paradoxes associated with the new configurations of attributes made possible by new media, and what do they reveal about the artifactual nature of our social constructions of traditional media?

Artifact as confound or guide?

We may be approaching some freedom from the blinder of the artifactual conceptualization of each traditional medium as a unique channel wholly distinct from other channels. That is, treating each attribute as binary (a medium 'has it' or doesn't), allocating attributes uniquely to different media,

and then confounding those attributes with a specific medium. As the same content, once in digital form, may now be provided through a wide variety of media, the social conventions associated with and thereby privileged by, specific media, may become more issues of fashion and taste and less confounded with specific communication processes. An example is the oft-heard critique of new media that they aren't 'interactive' or 'personal' like face-to-face – as though these attributes are simply dichotomous, and face-to-face communication is distinct because only it provides them. As audiences become joint producers, the argument goes, there will be more choice in how to achieve appropriate levels of interactivity or personalness, perhaps more local content and discussion, more personalized or demassified communication. One paradox here is that we may have less to rely on in novel social settings, compared to familiar forms of communication, to guide us as to how to use, evaluate or interpret communication through new media: which of the possible media in a particular situation provides more contextualization or socially constructed meaning? While we may debate choices of coverage and editorial positions in newspapers, we can still generally rely on some criteria for the veracity of the content, either because of professional standards, or because of the ease with which readers can identify content with producer. In World Wide Web pages, or in anonymous discussion lists or chat rooms populated with fabricated identities, accountability and credibility may be difficult to establish, at best.

Meta-information

Individuals, groups, and organizations, both for-profit and non-profit, transnational and community, may be freed from dependence on media distributors on the one hand, and individual members of their organizations on the other, for information about the communicative processes involved in reaching their audiences. That is, new media can be used to provide meta-information – information about the distribution, content and use of information and users within and across providers. For example, optical scanners do help grocery stores maintain better inventories, reduce errors at checkout, and improve the internal accounting process. But they also can be used to analyze food consumption patterns over time and within markets, and to integrate this purchasing information with other data sources. This of course raises issues of privacy, identity, incorrect records, consumer redlining, hiring and insuring practices, and 'social triage' whereby uneconomic consumer groups are excluded from targeted marketing efforts (Gandy, 1993).

Conceptually, there is no reason this meta-information might not also be used as one of many measures of the effects of community health campaigns, or used in critically analyzing industry strategies and linkages. Practically, of course, there are many obstacles to such innovative use of meta-information for non-commercial social purposes.

Choice

The boundaries between publisher, producer, distributor, consumer, and reviewer of content are blurring. Mass media now incorporate many interpersonal and interactive aspects (such as call-in radio and TV shows, home shopping through televisions with viewer conversations and telephone or online ordering, online commentaries and information accompanying television programs, 900-number hotlines or newsgroup discussions about weekly soap opera plot lines and characters, etc.). Thus new media provide many more ways to choose content, which increases the influence of structural and cultural influences on people's notion of choice. Providing multiple forms of access to content which is freed from its linkage to particular physical distribution forms (consider, for example, full-text articles online) frees us from constraints on allocation and transformation. Many people can use the same content at the same time. Selected aspects of content may be used in the sequence and timing preferred by the individual.

One paradox of this increased accessibility, and decreased dependence on specific distribution media, is that now individuals must make more choices, must have more prior knowledge, and must put forth more effort to integrate and make sense of the communication. Interactivity and choice are not universal benefits; many people do not have the energy, desire, need or training to engage in such processes. It is partially due to the idealization of the interactive nature of face-to-face communication that we expect everyone will desire such capabilities. Some people really do love ATMs (automatic telling machines) and answering machines. Being forced to wait in line to interact with people we have no connection with, while taking time away from interacting with others with whom we really do want to share a bond, is not as attractive as proponents of interpersonal community dialogue imply.

Many prefer the one-way aspect of some mass media and the ability to experience simulated or vicarious choice. Alternatively, the loss of programmed scripts and producer-developed plot lines in hypertext novels or interactive programs may in fact lead to more uncertainty and confusion by users, and a lost sense of shared meaning.

These changes also imply alterations in asymmetries of choice: that is, traditional media tended to locate the choice of initiating the communication in one place. The common example is of the broadcast station distributing the programming, but a more complex example is of traditional telephone calling: a person initiates a call to another without the other having any choice in the initiation. With the traditional telephone, one could choose to not answer it, but, even with answering machines, that is not a widely acceptable social choice. Because we have not, until recently (due to the proliferation of new telephone services), assessed the social aspects of telephone choice, we remain somewhat ambivalent about the telephone because of this asymmetry of choice. The meta-information about consumers,

noted earlier, enables telemarketers to target potential consumers much more precisely and aggressively, increasing our discomfort with this asymmetry. Thus new media, such as answering services, caller ID, and private cellular phone networks, are sometimes used primarily to offset the asymmetry of choice inherent in this familiar 'old' medium.

Diversity or division?

Interconnectivity – of content, medium, and form, through computers, networks, and digitization – allows open dialogue, connectivity, interrelatedness. The book, telegraph, railroads, telephone, highways (and now telecommunication networks) all overcame geographic and temporal (and now associational and retrieval) obstacles, and thus brought wider diversity of ideas, people, experiences. From certain philosophical, development, medical and moral perspectives, such changes are an unalloyed good.

Yet, this interconnectivity of new media (and infrastructure) also fills in space, time, location, and reduces the existence and relevance of uniqueness by imposing commonality. Note that such language implies an unalloyed bad. However, interconnectedness and uniqueness are inherently intertwined. Becoming more exposed to other, divergent perspectives also increases our own understanding, and potential for respecting difference. Encouraging xenophobia and tribalism by avoiding interaction with other groups does not seem the way to foster beneficial communities. But asserting a causal and negative effect of systems on interconnectedness, while proclaiming a moral preference for uniqueness, is paradoxical.

Time

One of the most familiar refrains is that new media help to overcome temporal constraints. A novel example of this is when voice mail users send messages to themselves to be delivered at a future date, an audio 'tickler file'. Yet the idealized notion of interpersonal communication presumes a socially constructed aura of immediate interaction.

It is true that negotiating time through new media generates new problems: people in the same organization may have a hard time defining what is a 'quick' response to a voice message. Paradoxically, however, decreasing the time delays in making communication possible might in some cases actually harm communication. Some people leave messages or use asynchronous media (such as the familiar letter) because they want to leave a message that can be well considered and dealt with later on, to avoid confrontation, or to escape one's own (or someone else's) poor social skills. Note that such media can also be used to overcome constraints of temporal synchronization, in order to increase overall interactivity and personalization; having voice mail means never having to say you were sorry you missed the call, while removing acceptable excuses for not responding eventually.

Social goods versus individual use

With traditional mass media, the individual audience member was the locus of evaluating the value of the medium and content. However, as new media foster subaudiences who communicate among themselves, the evaluations, benefits and disadvantages may also accrue at the group level. In complementary fashion, many information services are seen as valuable only when they provide a critical mass of diverse sources and kinds of information.

Yet some policies and research continue to emphasize the individual in these interdependent contexts of new media. One particularly noticeable instance is the growing emphasis in telephone regulations from access-pricing to usage-sensitive pricing. Many communities maintain their cohesion through social uses of the telephone that cannot be evaluated on strict cost-benefit analyses of individual telephone calls. Yet, usage-sensitive pricing presumes just this sort of analysis. This leads to losses by individuals, who can no longer afford their telephone bills, but there are losses to the collective benefit too. The larger social good is being reduced as fewer members of communities can engage in telephone connections. Similar issues arise with proposals for usage-sensitive charging for local loop connectivity to the Internet.

Use

'Using' a new medium involves many possible sources, distribution channels, interfaces, configurations of content, and creators, including the users themselves. Usage itself becomes less constrained, as the computer, telecommunications and digital components can process and display content at various locations, format, multi-media mode, or time for us, depending on personal profiles, prior activities, system capabilities, activity context, or others' requests.

But this of course generates confusion as to what component is under our control, or is the source of problems. For example, when considering how individuals use online journals, of the many aspects being used, which is most salient: the type of computer, the operating system, the display interface, the application, the organization of the content, the content, the graphics, or the pricing approach? Thus both in our daily use, as well as in research analyses, increased possibilities of use may foster increased confusion or confounding as to what the actual nature of 'use' is, and where problems, control, solutions, and interpretation reside.

CONCLUSION

Thus, I argue that we need to focus more on the underlying dimensions of attributes available, to different extents and combinations, in all communication forms instead of focussing on the particular medium. We are less likely then to fall prey to identifying the medium with its artifactual nature, as the 'medium' becomes so familiar to us that it becomes 'natural',

'idealized', 'human'. Indeed, much communication research – whether mass media, interpersonal, or organizational, positivist or qualitative, radical or functional – ignores the paradoxes noted earlier (and others) associated with new media. This is because confounding the values one holds about new, and traditional, media with the dimensions and attributes of communication processes ignores inherent paradoxes. Note that the underlying argument here is that all communication forms – from face-to-face through new media – due to their varying combinations of attributes, present opportunities for positive and negative uses, meanings, control, and consequences. The argument is not solely that 'new media' are unfairly critiqued from a perspective of 'idealized' notions of familiar media that take on the nature of artifacts – though this is true – but also that to better understand new media, we must also better understand traditional communication forms, by unconfounding their attributes (whether socially constructed or material) from their artifactual and idealized forms.

References

Chang, S-J. and R.E. Rice (1993) 'Browsing: A Multidimensional Framework', in M. Williams (ed.) *Annual Review of Information Science and Technology*, Vol. 28, pp. 231–71. Medford, NJ: Learned Information.

DeSanctis, G. and M.S. Poole (1994) 'Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory', *Organization Science* 5: 121–47.

Gandy, O., Jr (1993) 'Transaction-Generated Information (TGI): Signaling, Sorting and the Communication of Self', in J. Schement and B. Ruben (eds) *Between Communication and Information. Information and Behavior*, Vol. 4, pp. 421–33. New Brunswick, NJ: Transaction Publishers.

Griffith, T. and G. Northcraft (1994) 'Distinguishing between the Forest and the Trees: Media, Features, and Methodology in Electronic Communication Research', *Organization Science* 5(2): 272–85.

Jensen, J. (1990) *Redeeming Modernity: Contradictions in Media Criticism*. Newbury Park, CA: Sage.

Marvin, C. (1988) *When Old Technologies Were New*. New York: Oxford University Press.

Nass, C. and L. Mason (1990) 'On the Study of Technology and Task: A Variable-based Approach', in J. Fulk and C. Steinfield (eds) *Organizations and Communication Technology*, pp. 46–67. Newbury Park, CA: Sage.

Orlikowski, W. (1992) 'The Duality of Technology: Rethinking the Concept of Technology in Organizations', *Organization Science* 3(3): 397–427.

Pool, I. de Sola (1983) *Technologies of Freedom*. Cambridge, MA: Harvard University Press.

Rice, R.E. (1987) 'Computer-Mediated Communication and Organizational Innovation', *Journal of Communication* 37(4): 65–94.

Rice, R.E. (1992) 'Contexts of Research on Organizational Computer-mediated Communication: A Recursive Review', in M. Lea (ed.) *Contexts of Computer-Mediated Communication*, pp. 113–44. Hemel Hempstead: Harvester-Wheatsheaf.

Rice, R.E. and U. Gattiker (1999) 'New Media and Organizational Structuring of Meanings and Relations', in F. Jablin and L. Putnam (eds) *New Handbook of Organizational Communication*. Newbury Park, CA: Sage.

Sproull, L. and S. Kiesler (1991) *Connections: New Ways of Working in the Networked Organization*. Cambridge, MA: MIT Press.