A Biological Approach to the Rhetoric of Emergent Media

Christine M. Tracy and Robert K. Logan[1]

Emergence theory and the rhetorical canons offer a novel approach and new insights into the evolution and function of new media and media in general. This highly exploratory analysis uses the rhetorical canons and biological theories of emergence to explore how agents enter into and navigate within five different ecosystems—biology, media, design, news, and religion. The primary methodology is based on the five rhetorical canons—delivery, arrangement, memory, invention, and style—and three evolutionary terms—descent, modification, and selection. This original and progressive framework is initially applied here to the five ecosystems to better understand their evolution, function, and future. Searching for common strands in these ecosystems is the beginning of an ambitious inquiry into an eventual "ecology of ecologies."

Introduction

OUR key premise is that rhetorical theory and the rhetorical canons—the primary philosophical tools of communicators— take on a new and highly useful analytical significance when they are combined with the biological understanding of emergence and used to study how different ecosystems evolve. When combined with systems biology thinking, the rhetorical canons help us better understand how new media and the aforementioned ecosystems emerge. Combining rhetorical theory and systems biology thinking to the study of cultural and other ecosystems is a highly novel and promising perspective and this analysis is an initial exploration of this new view of media. In "The Biological Foundation of Media Ecology," Logan shows that "both biological and media ecosystems may be considered as media in themselves and that an ecosystem is both the medium and the message." A media ecosystem builds on the traditional notion of biological ecosystems and their organic interactions. However, unlike their biological cousin, a media ecosystem is limited to human beings and their interactions with each other and the technologies that enable their communication. (Logan, 2007, p. 19) This analysis extends and builds on that work by using the rhetorical canons and definitions of emergence to explain some of the origins and consequences of these interactions.

The Role and Range of Rhetoric

IN many ways, the history of rhetoric and the development of the rhetorical canon parallel the development of human consciousness on this planet. Before writing, the alphabet, print, computing, or any other notational medium other than human memory, rhetoric was—and most rhetoricians would argue still is—the primary interface for communication and cultural

---

[1] **Christine M. Tracy** is Associate Professor in the Department of English, Language, and Literature, Eastern Michigan University, and **Robert K. Logan** is Professor Emeritus in Physics at the University of Toronto.

environments. We believe, however, that *rhetoric is also the primary environment for the biological world*. The primary text of the rhetorical canon more than 2,000 years later is still Aristotle's *Rhetoric*. Written in the middle of fourth century B.C., *On Rhetoric: A Theory of Civic Discourse* is the foundation of the five rhetorical canons—delivery, arrangement, invention, memory, and style.

> The fact is that Aristotle's approach—asking the right questions of each rhetorical situation—provides the basis for the five canons that would be codified in the Roman's Rhetorica ad Herennium: invention (inclusive of ethos, pathos, and logos), delivery, organization (inclusive of the forms of public address), memory, and style. Most of the theory that comes after him extends what Aristotle had to say; in very few cases are wholly new conceptualizations developed. (Smith, 2003, p. 106)

As the lively debate among rhetoricians writing in the *Rhetoric Society Quarterly* and dialoging at the Rhetoric Society of America conferences attests, "The range of rhetoric is wide" (Burke, 1969), and it contains the memory of the universal nature of human communication. Writing in his eloquent and prescriptive *The Rhetoric of Rhetoric*, Wayne Booth articulates the power and potential of rhetoric in the postmodern age:

> In short, rhetoric will be seen as the entire range of resources that human beings share for producing effects on one another, effects ethical (including everything about character); practical (including political); emotional (including aesthetic); and intellectual (including every academic field). It is the entire range of our use of "signs" for communicating, effectively or sloppily, ethically or immorally. At its worst, it is our most harmful miseducator—except for violence. But at its best—when we learn to listen to the "other," then listen to ourselves and thus manage to respond in a way that produces genuine dialogue—it is our primary resource for avoiding violence and building community. (Booth, 2004, p. xi–xii)

Indeed, if rhetoric can do all this, it can certainly inform our understanding of the new digital media, which differ technologically from the older legacy media, such as print and electric mass media. Although the nature and means of communication are constantly changing, human needs and basic motivations do not. As we have mentioned, rhetoric is not about just speech or persuasion, but communication: it is much more than an analysis of text and public discourse or a set of strategies for negotiating symbolic action (Burke, 2004; Hart, 1997; Bitzer, 1968), it is also highly performative and quite simply, "something we do" (Haskins, 2005, p.4). Rhetoric is also about the achievement of human needs as identified by Maslow's Hierarchy of Needs, namely the needs of self actualization, esteem, love or belonging, safety, and physiology. Aristotle's *Rhetoric* is a comprehensive attempt at understanding and communicating these needs. An illustrative example is this description of happiness:

> 1. Both to an individual privately and to all people generally there is one goal {skopos} at which they aim in what they choose to do and in what they avoid. Summarily stated, this is happiness {eudaimonia} and its parts. 2. Let us, then, for the sake of giving an example {of what might be more fully explored}, grasp

what happiness is, simply stated, and the sources of its parts … 3. Let happiness be {defined as} success {euprazia} combined with virtue or as self-sufficiency {autarkeai} in life or as the pleasantest life accompanied with security or as abundance of possession and live bodies, with the ability to define and use these things; for all people agree that happiness is pretty much one or more of these. (1360b 94–96)

A Biological Frame for the Rhetorical Canons

AT first glance, it seems that rhetoric and biological notions of emergence are unconnected. There are, however, an interesting set of links between the five elements of the rhetorical canon, namely, arrangement, delivery, memory, style, and invention, and the three elements of emergence or evolution, namely, descent, modification, and selection. The overall goal of the rhetorician is persuasion and hence the link of the five canons of rhetoric with selection. The arrangement or rearrangement canon of rhetoric links to the modification element of evolution. *Arrangement*, as in DNA, incorporates rearrangement, as in re-mix, and hence involves modification. Even if one has all the components that could make for an emergent phenomenon, they have to be arranged in a certain order for the innovation to emerge. And it is not much of a stretch to see *delivery* as a form of descent from the rhetors to their audiences. One can also connect delivery with media or mediation. Delivery is basically the medium, but it also involves agency. The rhetor, especially in digital rhetoric, has many options and modes to deliver information.

DNA plays the role of *memory* in the biosphere. Media, both old and new, archive the memories of a culture. This is obviously true of the notated media like writing, print, recorded music, film, and even spoken language archives as has been suggested by Eric Havelock, who described the oral tradition as the tribal encyclopedia. The technosphere operates as a form of memory for the designer or inventor. As Basalla (2002) points out, no invention started from scratch. Each one was based on some previous invention. Archiving and drawing on archives are essential parts of news making. Of all the cultural institutions that exist, none preserve the traditions of the past with greater fidelity than religion. Social mores, languages, media, design, technologies, the dissemination of news, government institutions, and economic systems change with much greater frequency than religion. The stories of the great religions of the world are thousands of years old. Some forms of worship and organization have changed over the centuries, but the stories persist.

Memory is the descent element in evolution. Evolution can be described simply as descent, modification, and natural selection. In nature, modification is the result of mixing genes in sexual reproduction or in environmental causes, such as radiation or chemicals. Descent is merely replication or reproduction. And natural selection is simply the result of the fittest modifications dominating the gene pool. In rhetorical studies, there is much discussion about collective memory and the sites of memory. It is also an ancient technique of oral rhetors, who used physical architecture as mnemonic devices.

Style involves ornament and tells us how rhetors deliver their ideas. If delivery is about the medium, then style is about the message of the medium independent of its content, as expressed by McLuhan's "the medium is the message." The etymology of the word "ornament" is *ornare*, which means to equip, fit out, or supply. Thus, style is not just ornamentation in the sense of decoration, but an essential part of establishing the rhetor's argument. In *The Rhetoric*, style is

termed "lexis" (Latin *elocutio*), which refers to "ways of saying something" and is very different from what is said, or logos. It can be seen broadly as how a thought or idea is expressed in words or a total work or, in a more restricted sense, as word choice or diction.

According to Aristotle, style meant saying something in the right way. However, he offers conflicting opinions about practicing this canon. Style is word choice that is clear and appropriate—a natural style suited to the customs and "not in excess." He also recommended the use of metaphor as a way for rhetors to use imagery to make their words more meaningful and real to an audience. Rhetorical theorists have studied style closely (Lanham, 1992, Gibson, 1993) because it most intimately reflects the rhetors voice, which is a powerful tool.

Rhetoricians view *invention* as the search for and discovery of the best possible argument or line or reasoning to construct for a specific audience, subject or medium. Thus rhetorical invention is closely aligned with invention it is generic sense -- the creation or discovery of something entirely new. Invention tells us about the "what" of an ecosystem. The objective of design is innovation, hence, the design ecosystem incorporates invention as a central theme, but this does not exclude other canons of rhetoric, namely, delivery (distribution) style (user satisfaction); memory (use of elements from the technosphere of previous inventions); and arrangement (the remixing of the elements of the technosphere with the new elements created by invention). The analog of invention in the news ecosystem is putting a slant on a story as well as deciding that certain events are worthy as news. Blogs, wikis, and all the cutting edge participatory genre of digital media are changing the way news is disseminated. Invention in the religion ecosystem is the creation of new myths that move people spiritually and ethically and promotes altruism.

Emergence Theory and Ecosystems

ANOTHER tool that we will make use of in our analysis is emergence theory. In this analysis, we use and define emergence in the following way: an emergent phenomenon is one consisting of a complexity of components from which the properties of the phenomenon cannot be derived, predicted, or reduced to the properties of the components from which it emerged. Thus there is an element within an emerging phenomenon that is independent of its change that cannot be identified or predicted. The working definition of emergence we employ here builds on the biological premise that the properties or behaviors of living organisms cannot be derived from, predicted from, or reduced to the properties of organic chemicals of which they are composed. For example, biology cannot be reduced to physics or chemistry.

It follows, then, given this understanding that language and other forms of mediated communications are emergent phenomena whose properties cannot be derived from, predicted from, or reduced to human biology. The design of new technological tools is also emergent because it cannot be derived from, predicted from, or reduced to human biology or to earlier elements of the technosphere. For example, when we apply this definition of emergence to the social phenomenon of news, which is based on events in human affairs or natural events that effect human affairs, we come to understand it as an emergent phenomenon—a product of events being described and the bias or slant of the creator of the news story. The notion that a news report can be objective is a myth because the experience and vested interests of every news reporter are unique. It follows that the news, like biological organisms, media, and design, cannot be predicted from or reduced to the actual events being reported and the unique perspective of the reporter.

The Emergence of Digital Media and a Universal Rhetoric

WHILE the foundational premise of rhetoric as the art of persuasion remains steadfast, the nature of rhetoric has emerged and shifted over the millennia to reflect the shape of the dominant media of the time. For example, the rhetoric of oral and written communication will naturally differ as the two media of oral and written communication differ from each other in so many ways. The nature of written rhetoric changed with the arrival of the printing press. As pointed out by Innis and McLuhan, the electric media of mass communication brought with it an altogether new kind of mass media rhetoric. And finally with today's digital "new media" many scholars have identified a new rhetoric that they term digital rhetoric (Laura Gurak, 2001; Mary Hocks, 2003; Richard Lanham, 1993; Losh, 2007; Warnick, 2002; Welch, 1990; Zappen, 2005). According to Losh (2007), "Digital rhetoric is characterized by many new genres: e-mail, electronic slides, webpages, blogs, wikis, video games, etc." A number of universities offer courses in digital rhetoric, such as McMaster University, which offered a course in the English department entitled: "Digital Rhetoric and Communication."

Although media through which rhetoric has been communicated have gone through many changes, we are claiming here that *there exists a universal core to rhetoric*, whether oral, written, electric, visual, or digital. The reason for this universal core, or persuasive communication, is that although the media of communication have changed human needs and human motives as described by Maslow, the human psyche, has not, McLuhan aside. The style—the "how" of persuasion—and the voice of twenty-first century rhetors have changed as the dominant media of human society have changed, but *the basic logic and mode of persuasion are the same today as they were in the day of the classical rhetoricians* Plato and Aristotle and of the pre-literate rhetoricians, the singers of tales. We are here defining this universal core—the unchangeable or non-emerging part of the human psyche—as a Universal Rhetoric.

> We may think of Universal Rhetoric in a manner similar to Chomsky's (1957, 1965, 1995, 2000) notion of Universal Grammar (UG); or Brown's (1991) idea of human universals; or Logan's (2006, 2007) notion of Universal Culture. We argue here that a rhetorical analysis can contribute to a better understanding of the ontology of communication and to those elements that remain universal. Chomsky explains his notion of the UG as a result of the human psyche having been magically hard wired with a Language Acquisition Device that contains the UG. An alternative explanation offered by Christiansen (1994, 1995, 2003) is that language operates as an organism with its own evolutionary dynamics, an idea that dates back to Darwin (1871). Christiansen and Ellefson (2002) describe language as "a kind of beneficial parasite… that confers some selective advantage onto its human hosts without whom it cannot survive." Language evolved as an organism that could easily be learned by the human infant, which explains why the languages of the world possess a UG. The human psyche that shaped the grammar of human languages is universal, and hence, the grammar of those languages is universal.

Logan (2007) applied the same argument to culture, which, like language, is essentially symbolic—a set of ideas, beliefs, and knowledge, whose acquisition by the human mind, like

that of language, must be simple and straightforward if they are to be transmitted and hence survive. It therefore follows that culture is also an organism, an obligate symbiont. If we accept this hypothesis, then it follows by analogy that the conclusions Christiansen reached regarding language would apply to culture as well and that we could expect human culture to have a number of universal structures or features. In fact, Donald E. Brown (1991) in his book *Human Universals* cites over 100 universal features of human culture. Similar arguments for the universality of human culture are also made by Johnson and Earle (1987) and Cronk (1999). Extending the arguments of Christiansen (1994) with language and Logan (2007) with culture to rhetoric, we claim here that, independent of the medium and independent of the ecosystem in which it operates, *rhetoric is universal*. While beyond the scope of this analysis, a similar argument naturally follows for the ecologies of media, design, news, and religion that we have identified above because each is a product of human culture. Applying it to the biological ecosystem may be a bit of a stretch, but we justify this on the basis that all of the ecosystems we consider in this article have a biological underpinning because human beings are biological creatures and the various elements of their culture are also a product of descent, modification, and selection.

The Emergence of Digital and Quantum Rhetorics

WE can also apply this biological frame to the invention of digital rhetoric and the resulting digital culture that splintered into a thousand different subcultures because of the long-tail phenomenon. One goal of rhetoric was to persuade all the citizens in a society to adopt a common view of what constitutes good government. Aristotle and Plato, and medieval rhetoricians for that matter, had the view that there was one absolute truth at which one could arrive through rationale arguments. The postmodern view, which we believe is a consequence of the digital communication age in which we live, no longer holds that there are absolute truths or norms to which everyone should adhere.

This does not mean that the art of persuasion is no longer of value—quite to the contrary. Digital rhetoric serves the purpose of finding like-minded thinkers with which to commune. As a result, digital rhetoric becomes quantum rhetoric, where one can hold two opposite points of view simultaneously. There is no longer a correct position and an incorrect position, which is at the logical antipode of the correct position. *The quantum rhetorician sees both sides of the argument simultaneously.* Rather than establishing that one position is correct and useful and the other is wrong and not useful, the quantum rhetorician sees the value of both positions, not in an either-or stance but in a both-and inclusive stance.

McLuhan hinted at this when he declared that all technologies, all media, have both service and disservice. For example in the Talmudic tradition, seatmates take a position on a topic one day, and the next day take the opposite position and argue it with the same passion and ardor they had with their initial position. The Greeks, who fully embraced the classical rhetoric of a right and a wrong position, were convinced by Parmenides that non-being could not be. As a result (Logan 2004), they were unable to invent zero, a feat achieved instead by Hindu and Buddhist mathematicians, who were often criticized by Western mathematic historians for not always being logically rigorous. For the Hindu and the Buddhist, non-being not only existed, it was the path of salvation to Nirvana. They were also early quantum rhetoricians! Zero was also invented by the Mayans, but how they did this has been lost as so many writings of the New

World culture were destroyed by the Spaniards as they searched for the truth operating within the classical rhetorical mode.

Conclusions and Directions for Future Research

CONNECTING rhetoric, biology, communications, and the creation of technology by design, elevates our understanding of human cooperation, altruism, Ciceronian "good government," and wisdom traditions and also provides insight into that which is divine. For Cicero and later Quintilian, "good government" depended on the character of individual citizens. Character was a critical part of virtue, which prompted good deeds for the state, hence good government. As we further explore the ideas and arguments presented here, we also hope to create a historical context in which we connect the communication thinking of ancient Greece and Medieval rhetoricians with modern day thoughts about digital media and cybernetics.

The rhetorical canons and emergence theory provide a useful framework for explaining how cultural systems and institutions, such as journalism and religion, function and evolve. If the ecosystems we have identified, such as news, design, and interactions can move us closer to the larger notions of a Universal rhetoric and an "ecology of ecologies." Rhetoricans believe the persuasive process can be attributed to five elements—delivery, memory, invention, style, and arrangement. Biologists believe the emergence process can be attributed to three elements—descent, modification, and natural selection. We have initially applied these previously disparate heuristics to dominant cultural structures and discovered common threads. These insights reveal a more robust notion of media and particularly the power of media using digital technologies. This analysis also revealed a universal core in the persuasive process, which is critical to development of a quantum rhetor capable of integrating polarities. We hope this exploratory analysis will lead to further use of this methodology, exploration of the qualities of universal and quantum rhetoric, and a better understanding of how media evolve and function.

References

Aristotle (1991). *On rhetoric: A theory of civic discourse*. Trans. George A Kennedy. Oxford: Oxford University Press.

Basalla, G. (2002). *The evolution of technology*. Cambridge: Cambridge University Press.

Bitzer, L. (1968). The rhetorical situation. *Philosophy and rhetoric 1* (1968): 1.

Booth, W. (2004). *The rhetoric of rhetoric*. Oxford: Blackwell Publishing.

Brown, D. E. (1991). *Human universals*. New York: MacGraw-Hill.

Burke, K. (1969). *Rhetoric of motives*. Berkeley, CA: University of California Press (Originally published in 1950).

Chomsky, N. A. (1957). *Syntactic structures*. The Hague: Mouton.

_____ (1965). *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.

_____ (1995). *The minimalist program*. Cambridge, MA: MIT Press.

_____ (2000). *New horizons in the study of language and mind*. Cambridge: Cambridge University Press.

Christiansen, M. (1994). *Infinite languages finite minds: Connectionism, learning and linguistic structure*. Unpublished doctoral dissertation, Centre for Cognitive Studies, University of Edinburgh UK.

Christiansen, M. (1995). *Language as an organism - implications for the evolution and acquisition of language*. Unpublished manuscript, Washington University.

_____ (2003). Language evolution: The hardest problem in science? In M. Christiansen and S. Kirby (eds), *Language evolution*. Oxford: Oxford University Press.

Christiansen, M. & Ellefson, M. (2002). Linguistic adaptation without linguistic constraints: The role of sequential learning in language evolution. In A. Wray (ed), *The transition to language*. Oxford: Oxford University Press.

Cronk, L. (1999). *The complex whole: Culture and the evolution of human behavior*. Boulder Col.: Westview Press.

Darnton, R. (1975). Writing news and telling stories. *Daedalus: The journal of American academy arts and sciences*. *104*.

Hart, R. (1997). *Modern rhetorical criticism*. Boston: Allyn and Bacon.

Haskins, E. V. (2004). *Logos and power in Isocrates and Aristotle.* Columbia*:* University of South Carolina Press.

Herman, E. S. and Chomsky, N. (1998)*. Manufacturing consent: The political economy of the mass media*. New York: Pantheon Books.

Herman, E.S. and Chomsky, N. The propaganda model. Retrieved July 28, 2008 at http://www.thirdworldtraveler.com/Herman%20/Manufac_Consent_Prop_Model.html

Hocks, M. E. (2003). Understanding visual rhetoric in digital writing environments. *College composition and communication, Vol. 54, No. 4* (Jun., 2003), pp. 629–656.

Johnson, A. W. and Earle, T. (1987). *The evolution of human societies: From foraging group to agrarian state*. Stanford: Stanford University Press.

Kauffman, S., Logan, R.K., Este, R., Goebel, R., Hobill, D. and Shmulevich, I. (2007). Propagating organization: An enquiry. *Biology and philosophy*. In press. (Retrieved July 28, 2008 at http://dx.doi.org/10.1007/s10539-007-9066-x).

Lanham, R. A. (1993). *The electronic word: Democracy, technology,and the arts*. Chicago: University of Chicago Press.

Logan, R. K. (2004). *The alphabet effect*. Cresskill NJ: Hampton (1st edition 1986. New York: Wm. Morrow).

_____ (2007). The biological foundation of media ecology. *Explorations in media ecology. Vol. 6, No. 1.(2007)* pp. 19–34.

_____ (2006). The extended mind model of the origin of language and culture. In N. Gontier, J.P. Van Bendegem, and D. Aerts (Eds). *Evolutionary epistemology, language and culture*. Dordrecht: Springer.

_____ (2007). *The extended mind: The emergence of language, the human mind and culture.* Toronto: University of Toronto Press.

Logan R. K. and Van Alstyne, G. (2007). *Design ecology: Designing for emergence and innovation II*. Unpublished preprint available at http://www2.physics.utoronto.ca/~logan/02DesignEcology3.doc

Losh, E. (2008). Digital rhetoric. Retrieved July 28, 2008 from http://e3.uci.edu/faculty/losh/digital.html

Lusseyran, J. (1963). *And there was light*. Boston: Little Brown.

McCay, B. (2000). The evolutionary ecology of ecologies. In *Anthropology*, Annual Meeting American Anthropological Association, San Francisco, CA, Nov. 15–20.

McLuhan, M. (1962). *The gutenberg galaxy*. Toronto: Univ. of Toronto Press.

_____ (1964). *Understanding media.* New York: McGraw Hill.

Ong, W. (1982). *Orality and literacy: The technologizing of the word*. London and New York: Methuen.

Porter, J. E. Recovering delivery for digital rhetoric and human-computer interaction (article in progress for special issue of *Genre* on "New histories of writing").

Smith, C. R. (2003). *Rhetoric & human consciousness: A history*. Long Grove, Illinois 2003.

Walker, G. (1993). In praise of the sophists. *College english, Vol. 55, No. 3* (Mar., 1993), pp. 284–290.

Welch, K. E (1990). Electrifying classical rhetoric: Ancient media, modern technology, and contemporary composition. *Journal of Advanced Composition*, 10, 22–38.

Zappen, J. P. (2005). Digital rhetoric: Toward an integrated theory. *Technical Communication Quarterly 14: 319–25*. Retrieved July 28, 2008 at DigitalRhetoric2005JPZ.pdf.