

# The Internet as Social System: Applying Margaret Archer's Theory of Morphogenesis to Hypermedia Communication

Dee Pratt

Research, Technology, Innovation & Partnerships, Durban University of Technology  
Durban, KwaZulu-Natal, South Africa

## ABSTRACT

While there is a growing recognition amongst information and communication technology (ICT) researchers that computer systems are designed for and situated in social practices, the Internet tends to be viewed as an artefact, with the focus being on its technical and material aspects. This paper explores the notion whether the Internet is not only, as an artefact, an element in the nexus of relationships comprising the social structure in which we operate, but in itself a social system informing a social structure. This is because the Internet has all of the qualities which Margaret Archer's theory of morphogenesis, building on Roy Bhaskar's critical realist philosophy, attributes to social structures. However, this paper comes to the conclusion that the Internet, being a techno-system with social attributes, is not in fact a social system, but should rather be viewed as the mechanism which sets in place the communicative sub-structure provided by the World Wide Web. The "web" is a true social structure, that of communication, being both the context for and product of human interaction, offering us positions and practices which are analogous to our roles in real-world functioning, but which are deepened, extended and transformed by use of ICT.

**Keywords:** Hypermedia Communication, Critical Realism, Social Structure, Systemic Modelling

## 1. INTRODUCTION

There is a growing recognition amongst information and communication technology (ICT) researchers that ICT systems are designed for and situated in social practices [see 19] and an increasing trend towards using Roy Bhaskar's [6] critical realist philosophy to explore the complex web of relationships between society and technology. A key concept in accounting for the motivation behind human agency, as well as the causality that it in turn effects, is that of social structure. Basing her work on Bhaskar's philosophical meta-theory, Margaret Archer [3, 4] has developed a substantive theory of morphogenesis in order to explain both changes in and continuance of social structures; while social structures have emergent qualities, the actual processes involved (which she terms "morphogenesis" and "morphostasis") are complex and cyclical. Archer's theory goes some way towards explaining the inter-relationship between social structure and human agency; she stresses the need for "historicity" [2], that is the need to analyse social change in terms of the interplay between structure and agency over temporal phases. While ICT researchers are beginning to acknowledge the value of a critical realist approach [11], Mutch points out that Archer herself says little about the use or impact of technology on social structure [19] an issue which this paper sets out to address.

We are at present poised on the cusp of a shift from hard print literacy towards the "rich media" of hypermedia communication. This paper, which is based on the work of a doctoral group at a multicultural university of technology (UOT), explores some of the concepts, principles, methodologies and applications to hypermedia communication of Archer's morphogenetic theory, using an interdisciplinary approach [9]. It will examine the basic tenets of the critical realist philosophy, and suggest their relevance for hypermedia communication; the concept of social structure, the definition of which is problematic [21]; and the concept of the social mechanism, which in Bhaskar's and Archer's accounts does not include the applied or "empirical" aspect of the mechanism, an omission which is, however, addressed in Franck's work on systemic modelling [15].

It will be suggested that some of the problems encountered when applying Archer's morphogenetic action cycle to specific instances of hypermedia communication are due to the fact that the systemic aspects of morphogenesis/morphostasis (changes in or continuance of social structures) are not separated satisfactorily from contextual elements; one solution would be to develop systemic models showing the applied as well as the theoretical aspects of social structure. These types of systemic models would offer a means of describing complex social processes with open-ended outcomes, as in the author's systemic model of the communication process [22]. Finally, it is suggested that this paper will go beyond current thinking by ICT researchers to hypothesise that, rather than merely being included *within* social structures [14], the artefacts which are the most effective media for hypermedia communication are social mechanisms creating various social structures. The contribution this paper offers is in identifying synergies between approaches in social science, ICT and systemic modelling in written composition in an attempt to develop further a theory of hypermedia communication.

## 2. THE CRITICAL REALIST ORIENTATION

The British philosopher, Roy Bhaskar [6, 7], is generally acknowledged as the main proponent of critical realism in "re-thematizing ontology and giving it a certain new content or shape" [20]. Bhaskar's ontology contains three domains: the real, the actual and the empirical. The *real* domain comprises mechanisms (i.e. causes), events and our experiences of the latter; the *actual*, events and experiences only; while the *empirical* is the "tip of the iceberg", as it were, comprising only the residue of the thoughts and memories generated by events. Mechanisms are only dimly perceived, if at all, by humans, as reality is too complex, layered and dynamic for us to perceive the causes of things clearly. It is through logic and "transcendental leaps" that we can speculate about the nature of

reality outside of our perceptual range. The concept of “stratification” in the levels in Bhaskar’s ontology is a common motif in critical realism, and can also be applied to the inquiry process in which deeper levels of explanation are reached as the investigation progresses [13]. According to Alvesson and Sköldböck [1], it is the interest in deep-level causality which distinguishes critical realism from other orientations. An increasing number of information system (IS) researchers are advocating use of the critical realist orientation for ICT research, in particular Dobson [12], Carlsson [10] Mingers [18] and Mutch [19]. While critical realism provides a useful interdisciplinary meta-theory for research, it is up to researchers in the disciplines to develop suitable field-specific theories and methodologies. Archer’s theory of morphogenesis/stasis goes some way towards providing a substantive theory for social functioning within the critical realist perspective and has been applied to research into organisational innovation [23] and database storage [19].

### 3. THE MORPHOGENETIC APPROACH

Working within Bhaskar’s philosophical meta-theory [6-8], Archer’s morphogenetic approach provides a theoretical basis for the analysis of both transformation and continuance of social structures [4]. Social structures are mechanisms with emergent qualities, but the actual processes involved in social transformation (“morphogenesis”) and stasis (“morphostasis”) are complex and occur as cyclical movements over temporal phases. The term “social structure” refers to “configurations of causal mechanisms, rules, resources, powers, relations and practices” [1]. It is then a set of relationships between people and other entities which provides both a context for human interactions and motivation for social activity. While social structures are not directly observable, they are manifested in actual social interactions. As humans, we are born into the social structures set in place by the activities of those in the past, and our continuing social interaction further consolidates or transforms these structures for future generations. Archer emphasises that structure and agency must be analysed separately as they operate in different time frames [3]. This explains her preoccupation with “historicity” [2], or the need to analyse social change in terms of the interplay between structure and agency over phases in time.

If we apply Archer’s theory to use of ICT in settings such as e-learning or the Internet, it can be seen that we have inherited a set of social relationships for human interaction based on past interactions but which now include relationships with the entities of computers and the Internet. Have computers and the Internet “transformed” social structure? Humans use them for the most exalted and degrading interactions, with a wide range in between: the development of intellect, humanitarian goals, medical discoveries, commerce, fraud and child pornography. Social structure does not seem to have changed in essence: so far computers and the Internet have merely changed the scope and accelerated the pace of timeworn activities (note how the “family photo album” has morphed into grotesque proportions on Facebook). However, new technology may well trigger dramatic changes in actual social behaviour over relatively short periods, as in the introduction of the mobile phone. The exponential trend in ICT development, with the massive expansion of “rich media” resources, may in fact accelerate changes so that social transformation occurs much more rapidly than in the past. A caveat is that, as Archer points out, many of the results of social change brought about by morphogenesis

were not consciously planned nor what anyone would wish for, global warming as a result of intense industrial development being a case in point.

### 4. THE INTERNET AS SOCIAL STRUCTURE

Dobson notes that neither Bhaskar nor Archer have clarified the place of technology within the critical realist orientation [13]. Aunger [5], Fleetwood [14] and Lawson [17] provide views of technology and the nature of reality found in artefacts which might be helpful in clarifying the nature of ICT in general and the Internet in particular.

#### The Nature of Technology

Lawson [17] defines technical activity as “activity undertaken to harness the intrinsic powers of material artefacts in order to extend human capabilities”, and suggests that technical objects are social in two ways. Firstly, they are imprinted with the values and intentions of their human designers, which renders the social (as well as social relations) in a material form, so that the social achieves a *different mode of existence* by virtue of being embodied in material objects. Secondly, technical objects are inserted into existing social relationships (i.e. social structures) in ways which transform them. Aunger [5] represents technology as an “evolutionary phenomenon”, with the evolution of complex artefacts taking place through a sequence of developments over time. By taking an evolutionary stance, he shows that technology is not just about incidental and occasional use of artefacts, but has become an intrinsic part of human nature, in that “techno-environments” now provide the contexts of human functioning. According to Aunger, complex developments such as the World Wide Web represent a final development (or culmination of developments) up until this point in history, in which different categories of technological products (e.g. objects, structures or networks) were interconnected to make a technological system comprising different *kinds* of artefacts, which he identifies as a distinctive feature of *techno-systems*. Their historical development over time, their embeddedness in existing configurations of artefacts, and their very different components at various levels make it difficult to characterise the nature of techno-systems such as the World Wide Web. This is complicated by the fact that similar artefact types (e.g. structure, object, system) may in fact appear at different stages of technological evolution, and may involve very different types of producers, production processes and interactions.

#### The “Reality” of Artefacts

Fleetwood [14] categorises the mode of reality represented by ICT in critical realist terms. An entity is “real” if it has *causal efficacy* (but it may not necessarily be a material object). According to Fleetwood, computers and the Internet are *artefactually* real. This in turn involves a combination of *materially*, *ideally* and *socially* real aspects, referring to physical objects, concepts and social relationships respectively. ICT has a *material* aspect (i.e. in hardware, and material infrastructure); as Aunger points out, even computer programs have a partly material existence. ICT is “*ideally* real” in the sense of being conceptualised in certain ways by providers and users, a point also echoed by Aunger. Artefacts such as computers and the Internet are *socially* real in terms of being created for social use. Social structures include relationships between people and things, although Bhaskar points out that it is the positions and practices available to people which are interconnected, and not

the actual individuals themselves. To extrapolate this to the materially real presence of artefacts, it would be the role played by the artefact - or its function - rather than specific material objects, which would form part of the system of relations comprising social structure. Specific instances of material objects such as computers and systems infrastructure would represent *applied* aspects of the social structure which are not dealt with by Bhaskar and Archer except in analysing specific instances of social change in actual time/space settings.

### The Internet as Social System

In terms of Aunger's categorisation of the World Wide Web as a techno-system, and the way in which it has permeated human social interactions, it clearly could be viewed as a social system, in fact a social structure, in Baskar's and Archer's terms, constituting a "*web*" of relationships linking various positions and practices with the infrastructure (both material and systemic) required to bring about massive instances of temporarily and spatially distanced communication in a variety of modes and media. It has been charged with trivialising human relationships [16], but this does not mean that it does not make possible and sustain relationships at a deeper level, as well as the most worthy human enterprises. But the Internet, while the term is used synonymously with that of World Wide Web, is technically the *means* whereby the World Wide Web is made manifest, as I will suggest, the applied aspect of the social mechanism involved in a world wide distance communication system.

## 5. A SYSTEMS APPROACH

The "Chinese box" syndrome of nested systems suggested by the critical realist ontology makes systemic analysis fraught with problems in terms of establishing at what level the system is being investigated. Archer wisely restricts her analyses to specific social systems, such as education, as the concept of social structure does not (yet) include a comprehensive account of the systems and subsystems of social structure overall; the scope of social structure and social change is simply too large to map out more than a fraction of the systems involved. More seriously, showing social structure as the "context" of human interaction needs to be explained in terms of its relation to the actual time/space contexts in which it is played out. Finally, Archer's theory of morphogenesis describes social change and stasis as processes, but processes can be descriptive, and not necessarily systemic. The substantive theory of morphogenesis provides a bridge between Bhaskar's meta-theory of critical realism theory and social science analysis, yet I would suggest that a further level needs yet to be applied, and this is the systemic level. Archer's theory is indeed formidable in both its scope and grasp of social issues, and I take issue with critics who suggest that the models in her diagrams do not explain certain aspects of the morphogenic/static process<sup>1</sup>. My problem would be that, if social structure is a mechanism (and I believe it to be so), what would constitute the formal aspect of the mechanism as opposed to the applied aspect? And if there are subsystems, as the complexity of social being suggests, how do they interweave and interact *systemically*?

This, however, is an unfair question, as Archer's work is based on Bhaskar's philosophical approach (although he emphasises

the importance of praxis), and deals with the formal aspects of generative mechanisms only, leaving the applied aspects to be worked out by researchers in the disciplines. Bhaskar's definition of a generative mechanism is in fact "*a way of acting of a thing*" or its "essence" [7], and not its application in real-time events. Archer's definition of a social structure shows it as comprising a network of relations, being the formal aspect only of the mechanism involved. According to Bhaskar, a social structure *is* a mechanism (although the term "social structure" cannot be used synonymously with the term "mechanism" [7]). Archer's morphogenetic theory shows social structure as being set in place by the activities of those in the distant past. The function of the mechanism, according to Archer, is to act as the context for human social interaction, offering us positions and practices which both enable and constrain our social activities, but which is not necessarily self-replicating, as social structures possess *emergent* properties. Social structure, then, clearly has an important *contextualising* function in inducting humans into the social life-world. However, to analyse the working of any social mechanism in an actual context, we would need to understand its applied aspect.

Using a systems approach to modelling social phenomena, Franck [15] develops a definition of the social mechanism showing both its formal and applied aspects. The formal aspect constitutes a *theoretical* model of the mechanism, while the applied aspect is the *empirical*<sup>2</sup> model. Franck's theoretical model is the "architecture of functions" which need to be performed for the social phenomenon to take place, while the empirical (or applied) model describes the mechanism whereby these functions are performed in actual social contexts. This means that the systemic functioning of social mechanisms can be separated from specific instances in which the social phenomena occur; it also means that an input option can be added to show how external factors of the actual context impact on performance. These types of systemic models would offer a means of describing complex social processes with open-ended outcomes, as in the author's systemic model of the communication process [22].

Taking a systemic approach to social structure, what are the putative *functions* of the system of relationships contained in a social structure? A social structure performs a *contextual* function, that is, it sets social interactions in context. It offers positions and practices, clarifying what *roles* are available for people to adopt, as well as guidance as to how they may carry these out. It has a *regulating* function in indicating constraints as well as opportunities, and it has a *sanctioning* function in pointing out the boundaries of acceptable human behaviour, as well as anticipated penalties for transgressions. It has a *cohesive* (or *affiliative*) function in terms of engendering solidarity in people belonging to a specific society in particular or the human race in general. It probably also involves functions such as the protection of the society involved or the human species in general. There are obviously subsections to the above, as well as some essential functions I may have omitted: it is not my brief to offer an exhaustive account of the functions of social structures, as this is a speculative paper, merely to sketch what they might constitute.

But before going on I need to distinguish between a contextual *function* and features of various specific contexts. The

<sup>1</sup> How much of complex social functioning can a two-dimensional diagram explain?

<sup>2</sup> Not to be confused with Bhaskar's "domain of *empirical*" which is the realm of thought.

contextual function puts people in context in terms of orienting them to what is going on in any given situation. Features of the specific contexts in which human interactions take place can be considered factors which provide *input* into the system of social functions, affecting how (or if) the functions are performed in any given case. Using a systems approach, it can be seen that social structure does not in fact provide a specific context for human interaction, but performs a contextual function (amongst others) allowing people to orient themselves to the specific time/space contexts in which they find themselves. Within a systems approach social structure would be viewed as a generalised system of functions which might be manifested very differently in different specific contexts. To return to the issue of the question of whether the Internet is a social system, the Internet, whatever its social loading or conceptualisation, is an artefact, or *applied* aspect of a principle, and while it might set in place social relations in a socially-saturated manner, a systems approach would suggest that it is not in fact a social system or structure in itself. Its significance is that it is an artefact which has transformed the social into a new level of existence by embedding the social into material objects [17].

## 6. CONCLUSION

I undertook at the outset to attempt to go beyond current thinking by ICT researchers to hypothesise that the artefacts which are the most effective media for hypermedia communication create various social structures. I also undertook to identify synergies between approaches to social science, technology in general, ICT and systemic modelling in an attempt to develop further a theory of hypermedia communication. My tentative conclusions, then, are as follows. The Internet exhibits features in common with those of social systems or structures described by Archer: it contains a network of relationships, built up by the advances in technology over a long historical period, it exhibits qualities which were definitely not planned (e.g. facilitating mass social actions such as the "Arab Spring"), has emergent qualities, and provides a context for human interaction, namely the World Wide Web. Archer's account of social structure, however, does not focus on the nature of technology or its role in social structure. In work which examines the nature of technology and its relationship with the social, Lawson shows technology as imprinted with social intent, a manifestation in material form of our human aspirations in a space/time continuum which transcends the fleeting half-life of our momentary daily impulses, and, designed for use in a social setting, subsequently becomes part of the complex relations forming our social context [2]. The evolutionary aspect of technology described by Aunger emphasises the immersion of humans in technology from the earliest eras to the extent that we are already semi-cyborged, as well as confronting us with the reality that we now live in - and with - techno-systems which are in themselves burgeoning into an evolutionary spiral beyond conscious human control [5]. The Internet is a prime example of a rapidly evolving a techno-system.

But how do we visualise the relationship between the Internet and the social, and *is* it a social system, as the title of this paper suggested? To answer this question, firstly we need to decide on the function of the Internet, and which social system or structure is predominant in its operation. What the Internet does primarily is to make possible the extension and transformation of human communication, ranging from the more narrowly defined knowledge-creation to the widest range of interpersonal and social forms of meaning-making in a plethora of rich media. The

Internet exponentially increases the *scope* of human communication, and may in fact subtly change its nature. As communication is a key social sub-structure facilitating the cohesiveness, effectiveness and survival of society, the Internet can be seen to play a more crucial role in social structure than any previous technological development. The techno-system of the Internet extends and transforms human communication by setting in place and sustaining interactions (immediate and distanced) on the World Wide Web. The Internet can therefore be seen, in Franck's systemic terms, as the applied aspect of the mechanism setting in place a global human communication system. The theoretical model (or "system of functions") would consist of those functions which need to be effected for the system to be set in place and sustained. Discovering these functions and precisely how they are carried out (perhaps in ways not consciously anticipated) would be the next step in developing a theory of hypermedia communication. I will conclude by suggesting that The World Wide Web is not the "sum total of human knowledge" or a vast collection of rich media texts: it is a social structure effecting the virtual aspect of human social communication, extrapolated, exalted in its latest techno-achievement, and yet exposed in all its failings. Finally, it is the social medium through which this virtual paper is presented.

## 7. ACKNOWLEDGEMENTS

My grateful thanks to colleagues Abdul Borhat, Gita Mistri and Pregalathan Reddy for sharing ideas and literature, and motivating me to engage with the concept of social structure as contained in Margaret Archer's morphogenetic approach.

## 8. REFERENCES

- [1] M. Alvesson, and K. Sköldbberg, "(Post-) Positivism, Social Constructionism, Critical Realism: Three Reference Points in the Philosophy of Science," in M. Alvesson and K. Sköldbberg, eds., **Reflexive Methodology: New Vistas for Qualitative Research**, London: Sage Publications, 2009.
- [2] M. Archer, "Introduction: Realism in the Social Sciences," in M. Archer, R. Bhaskar, A. Collier, T. Lawson and A. Norrie, eds., **Critical Realism. Essential Readings**, London: Routledge, 1998 pp. 189-205.
- [3] ———, "Realism and Morphogenesis," in M. Archer, R. Bhaskar, A. Collier, T. Lawson and A. Norrie, eds., **Critical Realism. Essential Readings**, London: Routledge, 1998 pp. 356-381.
- [4] ———, **Realist Social Theory: The Morphogenetic Approach**, Cambridge: Cambridge University Press, 1995.
- [5] R. Aunger, "Types of Technology," **Technological Forecasting & Social Change**, Vol. 77, 2010, pp. 762-782.
- [6] R. Bhaskar, **A Realist Theory of Science**, Hassocks: Harvester Press, 1978.
- [7] ———, **The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences**, Brighton: Harvester Press, 1979.
- [8] ———, **Scientific Realism and Human Emancipation**, London: Verso, 1986.
- [9] ———, "Contexts of Interdisciplinarity: Interdisciplinarity and Climate Change," in R. Bhaskar, C. Frank, K.G. Høyer, P. Næss and J. Parker, eds., **Interdisciplinarity and Climate Change: Transforming Knowledge and Practice for Our Global Future**, London: Routledge, 2010 pp. 1-24.

- [10] S.A. Carlsson, "Advancing Information Systems Evaluation (Research): A Critical Realist Approach," **Electronic Journal of Information Systems Evaluation**, Vol. 6, No. 2, 2003, pp. 11-19.
- [11] ———, "Critical Realist Information Systems Research," **Encyclopedia of Information Science and Technology, Second Edition**, Hershey, PA: Information Science Reference, 2009 pp. 811-817.
- [12] P.J. Dobson, "The Philosophy of Critical Realism - an Opportunity for Information Systems Research," **Information Systems Frontiers**, Vol. 3, No. 2, 2001, pp. 199-210.
- [13] ———, "Critical Realism and IS Research: Some Methodological Implications.," in M. Mora, O. Gelman, A.L. Steenkamp and M. Raisinighani, eds., **Research Methodologies, Innovations and Philosophies in Software Systems Engineering and Information Systems**, IGI Global, 2012 pp. 63-68.
- [14] S. Fleetwood, "Ontology in Organization and Management Studies: A Critical Realist Perspective," **Organization**, Vol. 12, No. 1, 2005, pp. 197-222.
- [15] R. Franck, ed., **The Explanatory Power of Models: Bridging the Gap between Empirical and Theoretical Research in the Social Sciences**, Norwell, MA: Kluwer Academic Publishers, 2002.
- [16] J. Hope, "Facebook Is No Substitute for Old-Style Friendship," **The Sunday Tribune**, 14 April 2013, p. 11.
- [17] C. Lawson, "An Ontology of Technology: Artefacts, Relations and Functions," **Techné: Research in Philosophy and Technology**, Vol. 12, No. 1, 2007, pp. 1-14.
- [18] J. Mingers, "The Contribution of Critical Realism as an Underpinning Philosophy for OR/MS and Systems.," **Journal of the Operational Research Society**, Vol. 51, No. 11, 2000, pp. 1256-1270.
- [19] A. Mutch, "Technology, Organization, and Structure: A Morphogenetic Approach," **Organisation Science**, Vol. 21, No. 2, 2010, pp. 507-520.
- [20] C. Norris, "Roy Bhaskar Interviewed," **The Philosophers' Magazine**, Vol. 8.
- [21] D.V. Porpora, "Four Concepts of Social Structure," in M.S. Archer, R. Bhaskar, A. Collier, T. Lawson and A. Norrie, eds., **Critical Realism. Essential Readings**, London: Routledge, 1998 pp. 356-381.
- [22] D.D. Pratt, **Modelling Written Communication: A New Systems Approach to Modelling in the Social Sciences**, Dordrecht: Springer, Methodos Series, 2011.
- [23] C.K. Wong, "A Critical Realist Approach to Organizational Innovation Research," Proceedings of **4th International Critical Management Studies Conference**, Cambridge University, United Kingdom, 4th - 6th July 2005.