Summer 10-6-2011

THERE IS NO LONGER ONE TRUTH!: CORPORATE COMMUNICATIONS AND SOCIAL MEDIA MANAGEMENT THROUGH DEFERRED SYSTEMS

Nandish Patel

THERE IS NO LONGER ONE TRUTH!: CORPORATE COMMUNICATIONS AND SOCIAL MEDIA MANAGEMENT THROUGH DEFERRED SYSTEMS

Nandish V Patel, Brunel Business School, Brunel University, Uxbridge, UB9 6AL UK.
email: nandish.patel@brunel.ac.uk

Abstract

Web 2.0 technologies promote democracy which poses issues for corporate communications. Corporate communications is orchestrated by companies to promote business strategy and raise brand profile. However, companies' use of Web 2.0 technologies in the form of social media raises problems for corporate communications departments. Web communities on social media may run campaigns that have adverse effects for companies. This is the emergence effect of Web 2.0 technologies. The Web 2.0 platform is likely to be a permanent feature for corporate communications. In this paper, the theory of deferred action is proposed to promote the positive use of social media whilst managing its adverse effects, or more generally emergence. The deferred systems concept in particular is proposed for conceptualising and developing social media uses for corporate communications whilst managing emergence. Design principles are proposed to develop social media effectively for business use.

Key words: *Corporate communications, Deferred Systems, Design Principles, Management, Theory of deferred action, Web 2.0 technologies*

1 Introduction

Corporate communications is undergoing radical change because of Web 2.0 technologies as manifested in social media. Web communities or social media is reshaping online communication and collaboration patterns and the way information is consumed and produced (Kolbitsch et al., 2005; 2006). Social media participants are either existing customers of companies or potential customers. Companies like Dell and Coca-Cola successfully use social media. Dell uses different social media platforms for customer engagement and it has an island in the virtual world of Second Life. Coca-cola conversations is a blog written by its company historian. Social media has specific benefits for companies as social media participants contribute to the image of the company, but even greater potential risks.

Two factors stemming from social media affect corporate communication policies. Social media has a significant democratizing effect which corporations find problematical to manage in the pursuit of corporate goals. The implications of the democratization effect have not yet been investigated in the research literature. The second factor is the unpredictability of emergent situations arising from the complex communicative processes of the many different actors who form the social media participants. Similar to the democratization effect, corporations will find it problematical to harness these emergent situations to create business value unless they develop appropriate ways of designing the use of social media.

Corporate communications departments determine the branding and advise on devising corporate communication strategies. The role can extend to advising on corporate mission and strategy. Corporate communications is the way a company 'presents itself through behaviour, as well as through symbolism, to internal and external audiences' (van Riel, 1997). Research reveals that there should be consistency in formal corporate communication (Bernstein, 1986; Schultz, Tannenbaum and Lauterborn, 1994). Bernstein (1986) argued that organizations should communicate effectively with all of their stakeholders, making corporate communication broad and complex to achieve effectively. Corporate communication and marketing communications are fundamentally different Grunig, 1992).

Companies have carefully orchestrated how they want their customers, stakeholders, and the government to see them through well-planned corporate communications and brand management. However, Web 2.0 technologies mean that no more is there one version of the truth. Corporations find it problematical to manage the use of social media to create business value, and some companies have found themselves struggling to mitigate the effects of adverse social media campaigns by special interest groups, for example greens.

How can companies utilise social media for business value whilst not succumbing to adverse campaigns and harness emergent situations? The use of social media by companies is set to grow, but democratization and emergence has not been adequately addressed. Companies utilise social media like Facebook and Twitter. However, companies should consider whether consumers are sharing information online that would indicate an adverse experience? Companies may experience adverse effect of social media, and are even required to report them to appropriate bodies in the case of pharmaceutical marketing (Grip, 2010). The democratisation and emergence effects of social media should be considered in terms of *designing* social media to create business value in the context of meeting regulatory demands and pursuing business objectives.

The theory of deferred action is proposed as a suitable framework for designing use of social media for corporate purposes. A theoretical perspective has the benefit of deeper understanding of the emergent social media phenomenon. The theory of deferred action stems from the information systems (IS) discipline (Patel, 2006; 2008; 2011). Since IS are defined by Wells et al., (1992) as

composing people, organisation, and IT, the theory's explanation and proposed design solutions of these elements of socio-technical systems is suitable for designing social media for corporate use. Additionally, since the theory reconciles emergence with rational planning in the form of deferred systems, it is suitable for addressing the emergent effects of social media usage by companies.

In this paper, it is proposed that corporate uses of social media should be designed as deferred systems because of the unpredictable emergent effects of social media participants – existing customers, potential customers, stakeholders, and special interest groups such as ecologists, environmentalists. Examples of emergence include unfavourable campaigns by consumers or special interest groups. However, companies want to achieve planned business goals. By designing the use of social media as deferred systems they can take corrective action, namely deferred action.

The paper addresses the fundamentals of Web 2.0 communities and their use by businesses to pursue business goals. The major unpredictable factor in companies' use of social media is the emergent effect of social media, which is defined as the result of the communicative acts of users of social media in the next section, where the favourable and adverse consequences of emergence for companies and corporate communications are discussed. Then the theory of deferred action is proposed to design social media to mitigate the adverse consequences of emergence whilst pursing business goals. The theory proposes designing corporate social media systems as 'deferred systems', which are then defined, and Web 2.0 technology implementations in companies is interpreted as deferred systems design. A brief discussion is then presented which highlights the importance of having appropriate approaches for designing Web 2.0 applications whilst pursuing business goals. The paper is then concluded with brief overview of ongoing research in deferred systems and social media and offering pertinent conclusions.

2.Emergence through communicative acts

Social media is used by people to communicate with each other. Web 2.0 communities have an increasing impact on businesses such that new business models arise and existing business models are highly affected by Web 2.0 communities (Höegg et al., 2006). Examples of such communities are Wikipedia, MySpace, OpenBC, YouTube, Folksonomies, and Weblogs. Web 2.0 communities are formed by people with similar interests and their collaboration and communication in the community evolves. This evolution is manifested as emergent communications.

Truex et al (1999) argue that such communicative acts in organisations require alternative ways of conceptualising and developing information systems. The communicative acts of people lead to emergent behaviours which cannot be predicted, and therefore cannot be planned. Similarly, the communicative acts through social media require appropriate conceptualisation and strategic utilisations of social media by corporations.

In order to gain a firmer theoretical explanation of emergence it is necessary to consider complexity theory. Complexity is the physical or biological situation where a particular cause cannot be simply traced to its effect (Beeson and Davis, 2000). Emergence is characteristic of complex adaptive systems – systems that adapt to their environment (Gell-Mann 1994). The term 'complex adaptive systems' is used in complexity theory as a description of physical and biological systems which adapt to changing environment in order to survive. In terms of rational design, that is designing social media systems for effective corporate communications, emergence cannot be detailed in the original design specification. It arises subsequently, as the designed system is changed by its environment. Emergence is a property of the total system and cannot be analysed into components. It arises from the interaction of the communicative agents in the system in response to the environment. It is bottom-up. But for the purpose of rational design it is possible to control emergence (Standish, 2008; Muller-Schloer, 2004), such that it does not deflect the original purpose of the system. A firmer theoretical explanation accounting for emergence through communicative acts is provided in the next section, in terms of the theory of deferred action for designing systems for social use.

3.Theory of Deferred Action

Web 2.0 technologies are unlike systems that are developed from user specifications. They contain the element of unpredictable emergent communication. The theory of deferred action draws on complexity to explain how to design emergent systems (Patel, 2006). It is a design and action type theory; such theories are developed to inform practice (Gregor, 2006). It is proposed here to help manage and design for emergence in social media systems.

The design of social media involves designing social systems as well as the technological web system. Aspects of the social system, the behaviour of people who compose the social media, are re-designed when technical systems are introduced. As noted earlier, in social media the problem for designers is the potential freedom of social media participants and its adverse affects on corporate communications. The theory of deferred action is applicable for designing socio-technical systems, such as Web 2.0 technologies for commercial use, that have to be embedded in social systems like businesses interfacing with existing and potential customers, and other stakeholders and interested parties.

Deferred action is a design construct that enables planning rationally in the context of emergent situations. Corporate communication is rational action that is designed to achieve specific goals. However, designs embodying pure plans are problematical in social media. Social media contain unpredictable events and an evolutionary behaviour that cannot be predetermined. Deferred action is a synthesis of strategic action, such as corporate communications, and situational aware action.

The theory of deferred action addresses the fundamental problem of reconciling rational design with emergent organisation. Rational design is necessary to design technical and social systems. However, such design seems problematical for technical systems, such as social media systems, where the systems have to work in unpredictable situations. The problem stems from the attribute of emergence in socio-technical systems.

In the theory, the emergence attribute is addressed by synthesising rational design with emergent organisation to produce the deferred action theoretic. Action that needs to be sensitive to situation is best achieved by drawing a flexible plan of action, which allows actors in the situation to make the necessary adjustments in response to emergent factors, to achieve purpose. This kind of planning is called a deferred system, as illustrated at point B in Figure 1.

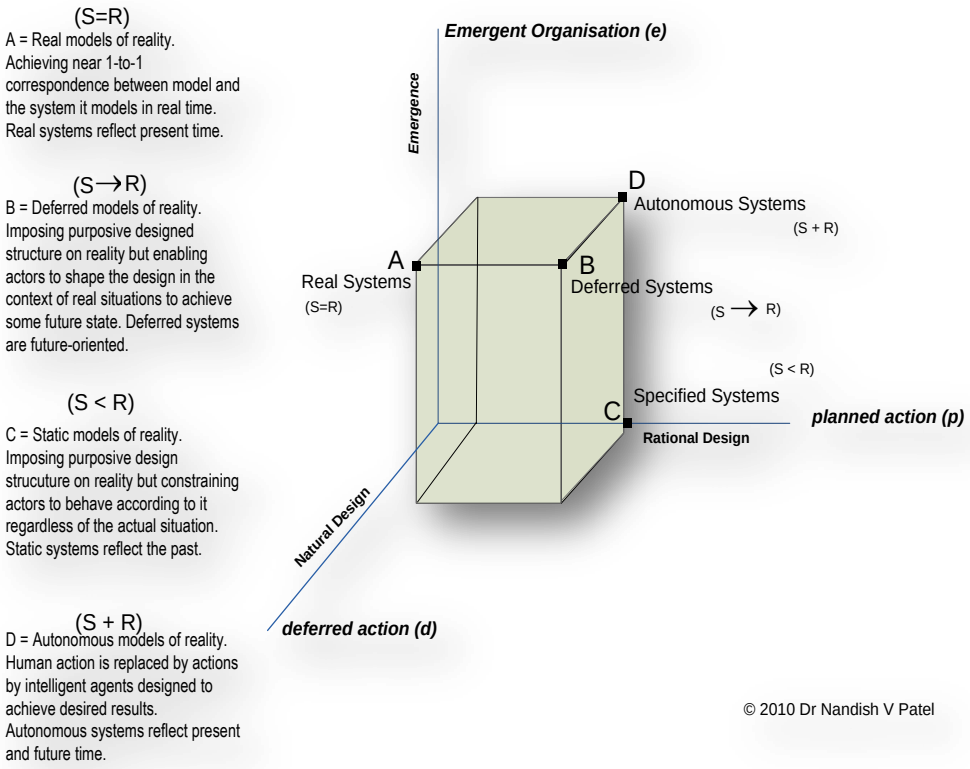

Figure 1 Deferred Action Design Dimensions for Designing Artificial Complex Adaptive Systems

Deferred action is emergent local action which could not have been predicted during planning. It is in addition to planned action. Figure 1 is an orthogonal illustration of the theory, depicting the space for designing for emergence. It depicts controlled systemic emergence of systems at points A, B, and D, which adapt because they are affected by changing environment. The focus in this research will be on point B deferred systems which are based on the *deferred model of reality*. The deferred model is that software systems are created to achieve organizational purpose which enables users to shape it in the context of actual situations. These are emergent systems as opposed to static systems depicted at point C. Social purposive action is depicted on the x-axis as planned action, for example an ERP system. However, this planned action is affected by changing environment which results in unpredictable systemic emergence, depicted as emergence on the y-axis. Deferred systems respond to the unpredictable emergence as deferred action, the action that people take locally – depicted on the z-axis. This deferred action is constrained within the bounds of the planned action to achieve the pre-defined goals. Deferred action is the theoretical explanation for managing systemic emergence and it can be applied to improve the technical design and development of social media for effective corporate communications.

4.Web 2.0 technologies or social media as deferred systems

By interpreting Web 2.0 technologies as deferred systems, point B in Figure 1, it is possible to manage unpredictable emergence in social media. Companies' use of social media is planned to help achieve corporate strategy – this is the planned action dimension of the theory. However, the communicative acts of participants of social media, special interest groups or customers, may lead to unexpected emergence. This could be problematical for companies. For instance, as planned action

companies may use the social media to promote their brand or marketing campaigns, but special interest groups, for instance green movements, may act to counter it – the emergence. This can be countered through deferred action by companies.

A deferred system is deferred until action designers decide what it becomes in actuality. A deferred system is the synthesis of the three design dimensions. This synthesis is necessary for conceptualising and developing deferred systems capable of responding to emergence. Emergence is a constant in social action, so information will also be emergent. A deferred system is future-oriented. The system implies a new reality (S→R). Point B in Figure 1 depicts deferred systems as deferred models of emergent social action, such as social media and Web 2.0 technologies. Purposive action is future-oriented as it seeks to achieve predefined goals. It changes the current situation into the desired situation. Businesses seek to do so by using social media.

The World Wide Web and Web 2.0 technologies are examples of deferred systems. They are planned by the World Wide Web Consortium accounting for the planned action design dimension. But the actual content of the myriad Web-based systems is determined by active designers, accounting for the deferred action design dimension. The whole Web is an emergent phenomenon, accounting for the emergence design dimension.

The informational behaviour or functionality of deferred systems is underspecified. But the deferred system is designed to enable controlled emergence arising locally through the communicative acts of people participating in Web communities. Deferred systems are self-organising because local action is necessary to respond to environmental disturbances. While the Web 2.0 technology is centrally planned by the corporation, the Web communities themselves self-organise, as separate individuals, groups, and organisations apply it to resolve their particular information needs.

Deferred systems are designed based three design dimensions, planned action, emergence, and deferred action. Deferred action is the synthesis of planned action and emergence. Figure 1 helps to depict the three dimensional space necessary for designing socio-technical systems like social media that have to cope with emergence. The other system types depicted in Figure 1 are covered in Patel (2011).

In deferred systems planned action is co-related to emergence to produce deferred action, which is the necessary ‘bottom-up action’ for coping with emergence. In deferred systems, planning in terms of specifying exact and all functional requirements is minimally possible because social media is affected by emergence. Consequently, it is necessary to enable individuals to act as required in the situation, such action is the deferred action of actors in deferred systems.

A deferred system is rationally designed but enables actors through deferred action mechanisms to respond to the situation. The Web and social networking systems are such deferred systems. Deferred systems are design by two sets of people reflective designers and active designers. Reflective designers are removed from the actual space of action because they are not participants. As such they do not have intimate and embodied knowledge of actual situations in which the social media is used. Active designers are involved in the actual social media.

The theory of deferred action addresses the fundamental problem of analyses of social systems such as social media for business purposes. Social systems should be analysed as qualities of rational behaviour and emergence. Rather than characterise social systems as some ‘social machine’ (See Berners-Lee, 1999; Hendler et el., 2008) that can be factored and analysed, as engineering approaches tend to do, the social system is conceptualised as autonomous. The analyses should be in terms of human aspirations, as well as work systems.

5.Deferred Design Principles

Principles for designing social media systems stem from the theory of deferred action. The principles are sound because of the underlying theoretical support. They are logically related and have been used and applied by researchers and practitioners (Elliman and Eatock, 2005; Dron, 2005). Deferred design principles are drawn that can apply generally to socio-technical systems design.

Underspecification

Underspecification is necessary because of unpredictable emergence. The notion of underspecification flows logically from the theory. Organisational design is problematical because of uncertainties and organisations are better designed by under-specifying. Underspecification would then enable actors to respond to uncertainties in the organisational setting. Organisations that specify function in detail or over specify function restrict actors' freedom to respond to perceived situations. Weick (2004) argues that organizational design is better done by applying the principle of underspecification, which is that 'Life persists when designs are underspecified left incomplete and retain tension.' (p.43). The same principle applies to Web 2.0 technologies.

Self-organising

Information systems should self-organise. Self-organizing is a corollary of underspecification. Focus should be on designing Web 2.0 systems architecture to enable subsequent self-organised functional design of emergent information. Underspecification and self-organizing are reflected in the deferred action construct in the emergence axis and deferred action axis (Figure 2). Since emergence is unpredictable it cannot be specified. Underspecification and self-organizing are reflected in the deferred action construct in the emergence axis and deferred action axis (Figure 1). Since emergence is sudden and unpredictable it cannot be specified, to that extent functional requirements remain underspecified. Functional requirements take shape as self-organizing by actors during the live use of the IA in unique emergent organizational settings – deferred action.

Adaptation

The term 'complex adaptive systems' is used in complexity theory to describe physical and biological systems that adapt to the changing environment to survive (Gell-Mann 1994). Social media systems should adapt to changing environment. Social systems should be designed for collective adaptation. People, organisation and information technology compose socio-technical system. As complex adaptive systems, socio-technical systems should be designed for adaptation in response to emergent organisation.

Ethics

It is unethical to design for someone else. The technical system is used by actors who are intimately involved in their particular work or pleasure activity. As this work is not directly experienced by reflective designers, it would be inappropriate for them to dictate by design how that work should be done.

The theory of deferred action intrinsically acknowledges ethics through the deferred action construct. Deferred action implies that the action is taken by actors. The ethics is original to Banathy's (1996) work on designing social systems. He argued that social systems should not be designed by someone who has no direct experience of them, but only by those who are actively involved. Banathy's (1996) principle for social systems design is that it is unethical to design for someone else. The principle is implied in socio-technical and participative approaches (Hirschheim and Klein 1994; Mumford and Beekman 1994). In deferred action, the principle is directly realised in the distinction between the *reflective designer* and the *active designer* (Patel 2006). Reflective designers are technical developers

who are *separated* from organisational processes. Active designers are actors responsible for completing organisational tasks and processes.

Feed Forward Principle

The feed forward principle is to enable the deferred system to respond to external environmental disturbances or events whilst maintaining its goal. This is done by becoming aware of the disturbance and making appropriate adjustments to the system. Active designers, or people who use the system, became aware of the disturbance and design and implement an appropriate response. Active designers' responses to the continual disturbances results in the deferred system becoming emergent.

Self-similarity Principle

Self-similarity is a thing that is a copy of another thing. A self-similar object is exactly or approximately similar to a part of itself (i.e. the whole has the same shape as one or more of the parts). The set of design decisions and the subsequent design are self-similar if they need to be repeated or copied again in another context. We found that deferred design decisions necessary to make the outsourcing decision were copied later when managing the outsourcing partnership.

Deferred design decisions

Since a system cannot be completely specified because of emergence, its ongoing design and development needs to be deferred to actors - the deferred design decisions principle. Actors with deferred design decisions capability make design decisions in the actual emergent situations.

The deferred design decisions principle demarcates the design of a system into two temporal phases. The first phase is the duration in which reflective designers invent the system. The second phase is the duration in which active designers use and further develop the system in situ. This phase caters for emergence. Active designers can design the information they require as and when they encounter unpredictable events.

The deferment principle is a perfect complement to the other principles and it realises them. It results in representation of active use or 'live use' of deferred IS. As emergent information needs cannot be predicted and specified, satisfying the underspecification principle, the deferred design decisions principle places design decisions in the hands of active designers (actors), satisfying the principle that it is unethical to design for someone else, the self-organising principle and the adaptation principle.
The deferment principle realises the deferred action construct– enablement of IS design by actors in emergent organization. Designing for emergent situations implies deferment of design decisions until a particular future situation warrants. Such deferred action is necessary because designing IS by specification cannot predict (pre-design) emergent information needs, but it can enable its subsequent design when it occurs as deferred design.

6.Discussion

Companies have to proceed carefully with the use of Web 2.0 technologies, as Nestlés recent corporate communications experience of Facebook demonstrates (Bbnet, 2010). The company tried to tell participants how to use the company's logo. The web community reacted adversely. This illustrates the problems of managing social media. These problems can be managed following the three dimensional design space proposed in the theory of deferred action – planned action, emergence, and deferred action.

Web 2.0 technology is a significant platform for corporate communications, which includes a web services and content in its various forms. Research on social software cover aspects of Web 2.0, but the strategic use of social media by corporations needs to be based on considered design principles as set out in this paper.

IBM provides its employees with guidelines on how to use social media (IBM, 2010). Companies cannot compile similar guidelines for the general public who compose web communities, as noted above in Nestlé's case. But business use of social media to promote corporate communications has reconcile the democratisation effect of social media with the business need to pursue goals. This has implications for existing business models which have to incorporate Web 2.0 communities. The deferred systems concept has been proposed in this paper to cope with these seemingly irreconcilable forces.

Facebook reflects the three theoretical dimensions of the theory of deferred action. It is a planned system and its designers had specific goals in mind. They rationally determined a design that would realise these goals. The designers of Facebook did not pre-empt the content but enabled actors to upload it. In doing so they acknowledged the emergence quality of social systems and incorporated it into the system design. By enabling actors to upload content they designed deferred action into the system, making actors into active designers. The informational functions of the system are underspecified in that the system is designed to grow. Further functionality can be added by Facebook designers themselves and third party designer. This is deferred design among reflective designer. Since the actual content and networking is determined by active designers, Facebook implements the ethical design principle too. Active designers decide how to build their network and what data to share with others. These three deferred design principles are incorporated in the other social networking systems noted above.

7.Conclusion

Whilst social media offers opportunities for wider customer and potential customer involvement for companies, it has associated risks. These include adverse campaigns by Web communities. This paper has examined the use of social media by companies to pursue business objectives, for example corporate communication. It has raised the issue of managing the unpredictable uses of social media by Web communities and proposed the theory of deferred action as a suitable theoretical framework for understanding and designing social media systems. In particular, it proposes that social media systems should be designed as deferred systems and seven deferred design principles have been elaborated to enable such designs.

Further research is intended to apply the deferred systems construct to social media through a case study. The aim is to observe the three dimensions – planned action, emergence, and deferred action, in the case study. The observations will provide data and from the data analysis to substantiate the seven deferred design principles. This will lead to the development of practice framework to help corporate strategist involved in designing social media uses to pursue business goals.

References

Banathy, B. H. (1996) *Designing social systems in a changing world*, New York, Plenum Press.

Bbnet (2010) Nestle's Facebook Page: How a Company Can Really Screw Up Social Media http://www.bnet.com/blog/businesstips/nestles-facebook-page-how-a-company-can-really-screw-up-social-media/6786 Accessed 7/12/2010

Beeson I and Davis C (2000) Emergence and accomplishment in organizational change. *Journal of Organizational Change Management* 13 (2): 178-189

Berners-Lee T (1999) Weaving the Web. Harper-Collins, San Francisco.

Bernstein, D. (1986), *Company Image & Reality. A Critique of Corporate Communications*, Holt, Rinehart and Winston, Eastbourne, UK.

Bezos, Jeff, 2003, "Jeff Bezos: Fixated on the Customer", Business Week Online, 29.9.2003, URL: http://yahoo.businessweek.com/magazine/content/03_39/b3851607.htm Accessed 3.12.2010.

Dron J (2005) Epimethean information systems: harnessing the power of the collective in e-learning Int. *J. Information Technology and Management* 2005 4(4): 392-404.

Elliman T and J Eatock (2005) Online support for arbitration: designing software for a flexible business process. *Int. J. Information Technology and Management* 2005 4 (4): 443-460.

Gregor, S. (2006) "The nature of theory in information systems." *MIS Quarterly* 30(3): 611-642.

Grip (2010) *The Grip Perspective, Social Media in Healthcare Marketing*. Grip Limited 179 John St 6th Floor, Toronto Ontario M5T 1X4, Canada

Grunig, J. (Ed.) (1992), *Excellence in Public Relations and Communication Management*, Lawrence Erlbaum Associates, Inc., Hillsdale.

Guha, R. V., Bray, T., 1997"An Meta Content Framework (MCF) Tutorial", http://www.textuality.com/mcf/MCF-tutorial.html. Accessed 3.12.2010

Hendler J, Shadbolt N, Hall W, Berners-Lee T, and Weitzner D (2008). Web Science: An Interdisciplinary Approach to Understanding the Web. Communications of The ACM, JULY 2008 51(7): 60-69.

Hirschheim, R. and H. K. Klein (1994) "Realizing Emancipatory Principles in Information Systems Development: The Case of ETHICS." *MIS Quarterly*.

IBM (2010) IBM Social Computing Guidelines Blogs, wikis, social networks, virtual worlds and social media. Accessed 3 December 2010 http://www.ibm.com/blogs/zz/en/guidelines.html

Kolbitsch Josef and Maurer Hermann, 2005, Community Building Around Encyclopaedic Knowledge. To appear in Journal of Computing and Information Technology. Accessed 3.12.2010: http://www.iicm.edu/Ressourcen/Papers/community_building_around_encyclopaedic_knowledge.pdf.

Kolbitsch Josef and Maurer Hermann, 2006, The Transformation of the Web: How Emerging Communities Shape the Information We Consume. In: Journal of Universal Computer Science, Vol. 12, No. 2 (2006), pp. 187-213.

MacManus, Richard, Porter, Joshua, 2005, "Web 2.0 for Designers", Digital Web Magazine, 4.5.2005, Accessed 3.12.2010. URL: http://www.digitalweb.com/articles/web_2_for_designers Accessed 3.12.2010.

Muller-Schloer C (2004), Organic computing: on the feasibility of controlled emergence. International Conference on Hardware Software Codesign. Proceedings of the 2nd IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis.

Mumford, E. and G. J. Beekman (1994) *Tools for Change & Process, A socio-technical approach to business process re-engineering.* Netherlands, CSG Publications.

R. Höegg, M. Meckel, K. Stanoevska-Slabeva, R. Martignoni: Overview of business models for Web 2.0 communities, Proceedings of GeNeMe 2006, p. 23-37, Dresden, 2006

Schultz, D., Tannenbaum, S.J. and Lauterborn, R.F. (1994), *Integrated Marketing Communications: Pulling it Together and Making it Work*, NTC Business Books, Chicago, IL.

Spivack, Nova, 2004, " New Version of My "Metaweb" Graph -- The Future of the Net", 21.4.2004, URL http://novaspivack.typepad.com/nova_spivacks_weblog/2004/04/new_version_of.html Accessed 3.12.2010.

Standish R K (2008), On Complexity and Emergence, Complexity International, Vol 09
Truex D P Baskerville R and Klein H (1999) Growing systems in emergent organizations *Communications of the ACM* 42 (8): 117-123
van Riel, C. B. M. 1997 Research in Corporate Communication: An Overview of an Emerging Field, Management communication quarterly 11, 2
Walls, J. G. Widmeyer, G. R., El Sawy, O. A. (1992) "Building an information system design theory for Vigilant EIS." Information Systems Journal 3(1): 36-59.