

Collective Development of Culture (CODEC)

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Proposal Summary

Collective Development of Culture
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Proposal Abstract:

The CODEC project addresses the question: How do new cultural configurations emerge out of new patterns of human interaction? Cultural globalization is advancing fast – not in the sense of harmonizing all cultures, but in the sense of bringing groups and individuals from different cultures into close and immediate contact. Through this, new modes of human interaction are created, in processes that, because the participants are intelligent human beings, possess self-organizing properties. CODEC investigates the possibilities for an emergence of collective intelligence through these processes, and looks for ways of innovating and advancing knowledge by the stimulation of them. Subprojects look at different examples of such emergence: higher education, knowledge management, the building of a web encyclopaedia, collective design processes, and online gaming communities. Methods range from computer simulation over theoretical work to empirical case studies. Through a new scientific understanding of the processes involved in cultural globalization, CODEC thus aims at supporting the creation of the necessary tools for the governance and management of its emergent collective effects.

B.1 Scientific and technological objectives of the project and state of the art

Background and Motivation

Late modern society has developed forms of socializing that are bound to produce novel effects on the social fabric and on the institutional structure of societies. Most importantly, the techniques, the contexts and the institutions involved in global communication have evolved. This has not only multiplied the speed and the capacity of global communications channels, but also allowed the formation of new kinds of social patterns and new cognitive structures. All processes affecting the change and dissemination of knowledge and culture have been diversified and accelerated. Knowledge and culture are now much less embedded in stable institutional contexts, and the resources they offer are available to new kind of groupings, for better or worse.

These developments lead both towards rational and irrational outcomes – to potentials for human growth and empowerment as well as risks of domination and manipulation. The progressive potential lies in the emergence of what can be called *collective intelligence*: New fields of knowledge, new forms of knowledge-related cooperation, new possibilities for disseminating information and knowledge, new openness to larger audiences. New social patterns and new technologies make new insights possible in the configuration of human thought and action. Huge potential gains from this emerging collective intelligence may be harvested, given the ability to overcome the complexities that are involved in the very same developments. These complexities, naturally, also constitute a large potential for risk, due to the multi-dimensional and complexity of the process. Reverse images of collective intelligence, mass phenomena of different sorts, should not be forgotten, but are not addressed in the present project.

The projects in this initiative explore issues, areas and methodologies that are needed to enable understanding and management of the emergence of collective intelligence (CI). As the term is used here - denoting emergent effects of global, knowledge-oriented interaction – CI is part of *cultural globalization*, which is a confluence of three broad developments.

- *Globalization* is bringing cultural groups, formerly separated by time and space into contact with each other. Human initiatives and societal forces are using the new transport and communication technologies. Cultural encounters multiply, and new – hybrid or entirely novel - cultures emerge. Globalization is addressed in a large literature (Held & McGrew, 1998), from economics (Hirst and Thompson, 1999) and politics (Lentner, 2004), to sociology (Bauman) and cultural analysis (Lukic and Brint, 2001; Berger, 2002).
- *Information and Communication Technologies* create new social and cultural dynamics: virtual interaction grows, new patterns form, networking replaces (or challenges, sometimes adds on to) social organization. Information is becoming freely available for enlightenment as well as manipulation. More human interaction is mediated by electronic representations. Mass media are challenged by interactive media for the organization of the cultural and political public. This ICT “revolution”, seen from a societal point of view, is also covered in a voluminous literature, from the first computer ‘gurus’ to postmodern sociologists like, especially, Manuel Castells (Castells, 1985; to Castells, 2004).
- The alignment of identity, community, state, nation, class and culture is dissolving. *Postmodernization* means that identities become relative, even elective, and communities likewise. Imagined communities may be selected and deselected in matters of nanoseconds in the virtual world. States are still predominantly nations, but the strength of the state, its national affiliation and the identification of citizens are less evidently granted. Classes are only *an sich*, the stability of industrial organization gives way to the fluidity of a service

society. This reconfiguration of modern society is the theme of much contemporary sociology, both the poststructuralist (Sennett, 1998; Bauman, 1996) and the neo-functionalists (Inglehart, 1997; Florida, 2002).

A number of significant possibilities and risks for the continued evolution of modern society are associated with the confluence of these three developments. To grasp the consequences we need a better understanding of the underlying dynamics. The CODEC project focusses on an aspect which is particular to the contemporary societies - *the development of new culture(s) via the increasingly intense interaction between initially independent agents*.

Scientific and Technological Objectives and State of the Art:

Cultures can be defined as collective held meanings, or more specifically “organized sets of meaningfully understood symbolic patterns” (Alexander, 1992) that are shared by a group of people. New cultures come into existence as such meanings, arriving from different contexts, encounter each other and either blend or refract, resulting in the formation of new meanings, or new groups.

The bringing together of meanings happens via the processes of

- communication: in the present world of all-pervasive media, both mass media and interactive media, communication across physical and cultural distances has increased in volume and speed. The recent emergence of almost worldwide Muslim protest against profanities in a local Danish newspaper shows the force and speed of such a communication process, whose main media were mobile phones and Internet.
- cognition: once meanings are presented to new audiences, they will be either actively or passively received. New concepts, terms and symbols can emerge, creating new technologies of conveying meaning – the “revolutionary colour code” is one fashion that emerged in just a couple of years – or entirely new ways of thinking and acting; the idea of corporate social responsibility is one example of that.
- cooperation: when individuals work together, the establishment of a common discourse is an important means of facilitating the arrival of a common goal. Social movements like Attac or Medecins sans Frontières develop ways of speaking about the social world that express assumptions about the world and values concerning the shared goals, give meaning to the group and act as a cement to hold the group together.

CODEC analyses share a perspective on the processes studied: A number of different agents (people, organizations...) that were initially independent and therefore developed different experiences/knowledges/cultures are now interacting. From this interaction the innovative effects emerge. The interaction takes place via a new shared environment – a medium, and institution, a meeting place - possibly supported by ICTs. It can be, e.g., the European community, an online game, the web, an organization or team, an urban neighbourhood, a school, etc. Their interaction forces them to confront their different cultures and to some degree to change or coordinate their ideas, beliefs, attitudes, behaviors, etc. As a result a new, shared culture may emerge.

This shared perspective does not imply a shared theoretical approach. The issues and problems in question will be studied using different theories and methods (cultural analysis, management and governance theory, network analysis, cybernetics and cognitive science, etc.). One very general model has been derived and will serve as a framework for analysis:

Looking for the new patterns of interaction, of thinking and acting - new cultural ‘sets’ – that either emerge from the self-organizing capacities and tendencies of human interaction, or are created to

meet the emerging needs, we hypothesize that the character of these new patterns depend on features of:

- the group: characteristics of the people brought together, their similarities and differences in terms of cultural background, broadly understood: social, demographic, cognitive, emotive, etc.
- the medium: features of the medium that bring them together: if it is virtual or real, institutional or spontaneous, mandatory or voluntary, etc.
- the process: intensive or extensive contact, short or long, routine or innovative

Some of the most important research questions to be pursued are the following:

The emergence of new cultural sets means that unity (integration) emerges out of diversity (differentiation).

- How, precisely, does that happen under different circumstances?
- how can the necessary diversity (requisite variety) still be preserved under the pressure for unity (consensus)?
- to what extent do the participants in this process still maintain their individual identity, and to what extent do they assume a collective identity as an outcome of the process?

The process can be facilitated or obstructed by a number of factors.

- what are the factors that may influence the success of the process?
- what is the role of ICTs in facilitating the process?
- is a strong difference in cultural backgrounds of the participants (e.g. different nationalities) an obstacle or a facilitator?

There may be important risks associated with the collective development of culture:

- what can make the process go wrong and result in the production of collective stupidity (e.g. superstition, mass hysteria, conformism, fundamentalism, ...) rather than collective intelligence (i.e. the group being smarter than its individual members)?
- can the process undermine existing institutions, destabilize established routines and replace functional arrangements with dysfunctional or unpredictable ones?

In relation to policy issues, CODEC expects to be able to contribute to EU policy making on the question of:

- what is the best institutional and/or technological infrastructure to promote the (constructive) development of a collective culture?

Research on cultural dynamics has largely been the prerogative of cultural sociology, anthropology and cultural studies (there is no clear boundary among those disciplines). Past research in cultural sociology has rarely touched on the present subject of emergent phenomena, which has mostly surfaced in recent works of cognitive sciences.

European cultural sociology has to a large degree been focussing on foundational issues, looking for philosophical and political aspects. Bourdieu (fx. 1994) is one exception of a major European sociologist, producing empirical work on cultural differences. A number of other studies have recently focussed on conflicts and clashes among different cultural groups in European societies (Melucci, 1996; Pilkington, 2003; Inglis and Hughson, 2003). American cultural sociology has been more empirical, but also less interested in societal issues (Smith, 1998). The idea of looking at cultural dynamics as a source of not only social tension, but also productive diversity and collective intelligence, has mostly been touched upon in technology studies (Shields 1996), media studies (Jones, 1998) and in some works of economic sociology (Florida, 2002; Harrison and Huntington, 2000).

Cognitive sciences present, basically, two approaches to the phenomenon of collective intelligence (CI) and related phenomena in the literature. One defines it as something particular to complex systems without regard of the nature of the system in question, that is, as an emergent property of systems to be found on prehuman, human, and posthuman levels of evolution. The other defines it as characteristic of human systems only. The latter is the one which is useful when focussing on culture.

George Pór describes CI as “the capacity of a human community to evolve toward higher order complexity thought, problem-solving and integration through collaboration and innovation” (1995). Collective Intelligence is, according to Pierre Lévy (called the “philosophe du cyberspace“ in <http://www.archipress.org/levy/>), the "synergy of skills, resources, and projects, the constitution and dynamic maintenance of shared memories, the activation of flexible and nonhierarchical modes of cooperation, the coordinated distribution of decision centers" (Lévy 2001, 10).

Collective intelligence, self-organization and emergent systems in non-human – animal or technical – fields are important fields of study with many applications (Camazine, e.a., 2003; <http://aants.gsfc.nasa.gov/>; Bonabeau 1999 and 2003; Webb 2002). The present project looks only at the understand of emergent properties among human individuals and organizations.

Lévy considers the perception of social insects as intelligent a “barbarian” notion. For him, CI begins with the advent of language and hence *human* culture (cf. Lévy 1997, 32). CI is according to Pierre Lévy therefore a *human* property only, that arose with the development of tools, institutions, knowledge and values. “All these dimensions of culture contribute to improve human collective intelligence” (Lévy, Online¹). CI grows with “knowledge, autonomy, responsibility, ethical behavior and creativity of the individuals who compose it” (Lévy, Online,). He defines CI as an overall distributed intelligence, because anyone knows everything but everyone knows something (cf. Lévy 1997, 30).

Learning and memory are also central aspects of Pierre Lévy’s definition of Intelligence. Lévy defines *intelligence* as the ability for “perception, action planning and coordination, memory, imagination and hypothesis generation, inquisitiveness and learning” (Lévy, Online). The added *collective* takes the power of groups into consideration. This power is according to Lévy also related to the group’s culture (cf. Lévy, Online). For George Pór, Collective Intelligence is composed by communication, coordination, memory, knowledge management and learning (1995).

Cultural diversity is one of the most precious forms of wealth in a global society based on the cultivation of ideas and knowledge. CI encourages the design and test of values, knowledge and tools for intellectual cooperation, and it invites open-mindedness. According to Pierre Lévy, the “propagation of such a culture could lead to a significant and positive threshold in global human development” (Lévy, Online). If culture is defined as an emergent result of interacting individuals, cultural transmission can be defined as a process happening both on a spatial and a time level, i.e. people from different cultural and historical backgrounds influence each other.

In western industrialized economies, mainstream social science assumes agents to behave on the basis of individual rationality. Collaboration and information-sharing is frequently seen as competition-driven activities. From the perspective of self-organizing systems, as Peter Gloor points out, “Collaborative Innovations Networks lead to a new approach to innovation and the management of creative groups, resulting in more communicative, collaborative and innovative organizations”; these networks enable “more efficient leadership, culture, structure, and business processes” (Gloor 2004). Our [Wikipedia case study](#) enables us to study this distinction between

¹ „Levy Online“ refers to information concerning “Cultivating the Global Knowledge Society” that can be found on the Website of Pierre Lévy’s research institute “The Canada Research Chair in Collective Intelligence” at the University of Ottawa. In: <http://137.122.100.152/>.

individual and collective rationality in the context of an emerging virtual network. What Gloor (2006) identifies as COINs – Collaborative Innovation Networks - are defined by three characteristics: 1. They innovate through collaborative creativity, 2. they collaborate under a strict ethical code and 3. they communicate in direct-contact networks. Gloor furthermore points out, that the ideas of cyberteams do not only apply to the Internet, the Web, Linux and other Open source software projects, but also to every company and organization in daily business life (cf. Gloor 2004 and 2006).

Cultures are highly complex systems; their changes usually cannot be explained by using simple cause-effect thinking. Hence complexity thinking and complexity theories are very important tools that can make a contribution (cp. Bar-Yam 2003 and 2004, Lewin 1992, Frotnow and Homer 2002/2003, Byrne 1998, etc.). Complexity research takes the interweaving and interconnectedness of the individuals and their interactions into account. This communication and mutual interdependence on the individual level leads to the emergence of cultures on a macro level. Second, Network Analysis (e.g. Bar-Yam 2003 and 2004, Barabási 2002, Knoke and Kuklinski 1982, Watts 1999 and Carrington et al. 2005) provides a number of tools for understanding such complex and emergent phenomena.

Third, however, multi- and interdisciplinarity is not enough in order to tackle today's complex and global problems. Transdisciplinarity is a new emerging principle of research that arose together with the process of globalization. Hence when dealing with complex question, such as those regarding cultures and societies, (mono-) disciplinary research is not enough; transdisciplinarity is a research concept that takes complexity into consideration and uses cross-disciplinary methods. "Collaboration in a transdisciplinary research projects requires partners from practice to open their horizons, [...] developing new products to position themselves on the market. For participants from science, collaboration results in new views and ideas, better understanding the "real world" and testing and adapting of their theories [...]" (Häberli & Thompson Klein 2002, 16). A new emerging information society, which entails societal and economic changes, demands transdisciplinary research: „(...) everyone can learn to work together through *networking*. Part of the meaning of *global thinking* is working across not only countries but also disciplinary specialities" (Bill, Oetliker & Thompson Klein et al. 2002, 32).

Transdisciplinarity and cultural dynamics pose new challenges for knowledge processes like education and knowledge management. Our case studies on higher education and knowledge management investigate those challenges and address the still more pressing question of how bring the capacity of societal and organizational governance on a level with the complexity of cultural transformation.

Higher education is in a transition phase from a past where institutions were built on and for the nation-state and the national economy, to globalized institutions uniting commercial, economic, political and social purposes (Jarvis, 2001; OECD, 2004; de Wit, 2002). One aspect of that is the structural change of the modern state as it alters its relation with the economy; another is the globalization of science and the development of scientific transdisciplinarity, eroding the institutional bases of traditional university disciplines (Nowotny, e.a., 2001).

Knowledge Management is a new discipline, with roots in both sociology of science (Fuller, 2002) organization theory (Sanchez, 2001) and business studies (Mahnke & Pedersen, 2004). The concern with knowledge reflects the increasingly knowledge-based nature of contemporary commerce and production, and the necessity of constant innovation: to innovate, a knowledge base must be always up to date and accessible. The globalization of businesses and cultures is making that both easier, in the sense that information transmissions are fast and easy, but also more complex, because the cultural bases of information is varied and varying. The intention of WP 4, to study the cultural

dynamics of knowledge transmission and application, is a new idea that so far has only rarely been applied (Desouza, 2005; Little & Ray, 2005).

The case study on collective creativity takes the focus on innovation and knowledge application into another field: the fast expansion of human interaction produces emergent properties and as such presents both threats and opportunities for organizations wishing to innovate. Such emergent properties may, however, involve the use of widely different elements that cannot be brought together and applied for practical purposes without a design effort. This creative design effort may be an individual process of searching for inspiration and ideas, but in many cases it is a collective process involving the bringing together of different skills, perceptions, and values (Csikszentmihalyi, 1996; Mamykina, 2002; Feldman, 1999; Schneiderman, 2000; Mumford, 2003). WP5 is a case study of processes of collective creativity, using verbal protocol analysis to investigate the process of creating new and useful products through collaborative means.

An increasing share of the interaction among agents in higher education and research, as well as knowledge management and design, takes place in virtual communities – a new form of interaction midway between the material communities of traditional society and the ‘imagined communities’ of modern nation-states. The case study on virtual communities in internet gaming focuses on this specific process of forming communities in a world that is virtual, i.e. consists of symbolic exchanges in a highly structured medium, yet real - in the sense of having very real effects on both participants’ imaginations and actions. Through those effects, virtual gaming is having more and more effect on societies (Taylor, 2006; Juul, 2005; Salen & Zimmerman, 2003). The formation of common meanings and perceptions in such communities is an example of a process that is both self-organized and has emergent properties – but is also manipulated and governed (by software developers and property holders).

Because it is a social and partly commercial process, this mixture of self-organization and governance is typical of many processes of cultural development. However, while the steady and rapid development of (online) game culture has been recognized, there is relatively little scientific work, in the social or the cognitive sciences, on developing a systematic, principled understanding of the impact on individual cognition, social structures and their interaction (e.g. Pargman, 2000; Taylor, 2006). From a cognitive science perspective, the interaction of the real, material world with possibly multiple virtual quasi-material worlds, poses a highly interesting challenge from a distributed cognition perspective. This is due to the fact that the interaction between mind and material world (artefacts, tools, etc.) has been recognized as crucially shaping cognitive processes by both cognitive science as such (e.g. Susi & Ziemke, 2001; Susi, in press), but also related fields such as cognitive archaeology (e.g. DeMarrais et al. 2005; Wynn, 2002). The WP7 case study is intended to bring these insights further along a path that is connected with similar studies from other disciplines. In the context of CODEC, it will provide useful data for the study of collective development of culture and intelligence.

Work Packages 1 and 2 – a computer simulation of the collective development of culture, and a subproject on theories of culture and self-organization, respectively, provide additional, integrative theoretical background and synthesis for the five case studies. The computer simulation follows the process of interaction on different premises in a controlled environment, where participants and the characteristics will be abstractly defined and systematically varied. In that way, some of the fundamental patterns of complex interaction can be studied, and compared to the studies of real and ‘virtual’ processes. The theory project initially produces an overview of the theoretical approaches from cognitive science and cultural sociology, then proceeds to integrate results from the simulation and the case studies into its models. At the end, the theory project aims at producing syntheses of the whole project, making them available and accessible to interested academics and practitioners.

B.2 Relevance to the objectives of NEST

The CODEC project focuses, as suggested in the NEST work programme, on the identification of conditions that foster or hinder the build-up of a potential of societies to solve the problem of invasion, interpenetration or isolation of cultures. It does so by framing a concept of collective intelligence which is an emerging field of scientific and technological endeavours (p. 12).

The emergence of collective intelligence phenomena is actualized by contemporary cultural globalization and the innovative dynamics it creates.

So far, there are scattered approaches towards collective intelligence around the world and a promising one outside Europe (Pierre Lévy, as yet unpublished). An attempt to put together a critical mass in European research to consolidate these approaches in order to yield a concise theoretically grounded transdisciplinary research seems thus urgent.

To develop a better understanding of the dynamics underlying cultural innovation, the project's focus is on how collective behaviour can emerge that helps increase the problem solving capacity of a group or society vis-a-vis its cultural environment. The dynamics is located in the interplay between different cultural actors (individuals or organizations) and the environment they build (in which collective intelligence emerges). The NEST Pathfinder work programme mentions this on p. 5.

The role ICTs play in enhancing cultural innovations is highlighted in the project, but the technologies of ICTs are not studied in this context, where ICTs are seen as instruments and facilitators for a process that is the actual object of research.

The project draws upon a number of sociological fields as well as the following disciplinary developments mentioned in the workprogramme section 8 (p. 19):

- cognitive science, insofar as it tackles distributed cognition;
- evolutionary models, insofar as it is using the framework of evolutionary systems theory (self-organisation);
- network analysis, insofar as it includes concepts of network theory;
- simulation methods, insofar as it runs an agent-based model.

In addition, the following fields of research are brought together in this cross-disciplinary endeavour:

- sociology of technology, in particular, assessment of ICTs, and Human Computer Interaction;
- knowledge management;
- sociology of learning;
- creativity and innovation
- cultural analysis

The project is oriented towards the integration of the different concepts and findings in order to attain generalisations regarding the following questions (listed in the workprogramme, section 8, p. 20):

- by focusing on the emergence of shared knowledge and values from the interaction of different cultural agents that make a difference for the network they participate in, conditions of discontinuity and change are tackled;
- by formulating the basic assumption that a proper balance between differentiation and integration (unit-through-diversity) is an innovative design serving identities best, the interrelation of different cultures and factors that foster cultural success are addressed (see also reference document, p. 6);

- by ascribing a downward causation role to the shared cultural structures that emerge from the agents' interaction, the influence on the formation of individual knowledge and values is dealt with and by the unity-through-diversity principle of collective intelligence, the dialectic of the global and the local and uniformity and diversity is envisaged (see also reference document, p. 6);
- by analysing the potential of the ICTs and, in particular, the internet as material infrastructure facilitating the emergence of a cultural state of collective intelligence, the influence of technology on cultural dynamics is underlined.

B.3 Potential impact

As evidenced in recent analyses of a “clash of civilization” thesis, as well as in less apocalyptic versions of the same concern, contemporary cultural developments are both potentially liberating and possibly apocalyptic: while innovations in the cultural field may improve the lives of millions, cultural developments has at the same time the potential of making lives miserable for millions of people. Mass media, ICTs and socio-economic changes all contribute to this potential for great benefits and great harm.

While CODEC does not in any way promise to solve the problems involved in cultural encounters, it addresses the core question that is presently emerging: how do new cultural configurations emerge out of new patterns of human interaction? In the present situation, new groupings and movements can arise globally in a matter of days or weeks, with the potential of altering the conditions of existence for important societal institutions. Knowledge of the specific dynamics of this process is crucial to contemporary societies.

CODEC aims at providing some of that necessary knowledge. Focussing more on the positive potential, the possibilities for harvesting the gains from collective intelligence, and less on the negative side, the risks of chaos and instability, the objective is 1) to systematize the experiences from some of the most significant instances of the emergence of innovative cultures and collective intelligence, and building on that as well as on prior research, 2) to advance scientific understanding and theory building on the subjects of culture, innovation, and collective intelligence.

In the new millennium, most of the world is encountering swift cultural globalization. Many of the inherited social science theories are ineffective or at least insufficient in the face of such cross-national and cross-sectoral dynamics. CODEC suggests a trans-disciplinary project that at least begins the process of building a new understanding of the dynamics of human interaction, beginning from the cultural transmissions and transitions that form the micro-level core of all significant social change.

Europe is at the absolute forefront of this process. Not only does the European Union aim at building the most ambitious integration system in human history, across all sorts of societal divides, and hopes to overcome the numerous conflicts involved in venture. The EU also envisions the production of “added value” in the process. Emergent phenomena like collective intelligence is one possibility that is likely to derive from the widening of social and intellectual networking in Europe – while the cultural complexities in this process are daunting. The CODEC project offers a wedge into the thicket of these complexities, and suggests a positive take on the dynamism of diversity.

For the project, the access to different European realities is indispensable. There is no better way to study cultural complexities in emergence than by the investigation of acute diversities. Here, again, the European example is unique: all the elements of culture are at stake – value differences, linguistic, political, aesthetic and social differences. At the same time, this project enables scientific

expertise from widely different research cultures to cooperate and enjoy the benefits of mutual inspiration and support.

B.4 The consortium and project resources

Partner 1: Copenhagen Business School, Department of Intercultural Communication and Management.

The Copenhagen Business School (CBS) is a large state university with 15 research departments covering all aspects of business studies plus economic, political and social sciences, linguistics, communication and cultural analysis. The ICM Department covers international aspects of business, social science and cultural analysis.

Sven Bislev, project co-ordinator, is an associate professor at the Department of Intercultural Communication and Management. He has recently completed 6½ year as Head of Department and is currently Director of CBS Undergraduate. Research publications since 1990 address European integration, globalization, new public management and the globalization of higher education. With M. Ougaard, he organizes the CBS contribution to the FP-funded GARNET Network of Excellence. With S. U. Kragh, he has conducted a survey of student values showing the existence of a globalized segment of students from different countries with similar, postmodern values. Recent publications:

S.U. Kragh and S. Bislev, "Universities and student values across nations", in *Journal of Intercultural Communication*, 2005, issue 9.

D. Salskov-Iversen, H.K. Hansen, S. Bislev. "The Global Diffusion of Managerialism", *Global Society*, vol. 16, no.2, 2002

Maribel Blasco, team leader of Work Package 3, is an associate professor at the Department of Intercultural Communication and Management. She has published work on learning processes, educational rights and citizenship; and on the so-called global, cosmopolitan values disseminated through formal and informal citizenship education programmes and through use of new media in Latin America. She has also worked on cross-national variations in approaches to business ethics and is currently studying the ways that culture is taught to international management students. Recent publications include:

Blasco, M. "Business students and culture: searching for a toolbox"? In Askehave, I. (ed.) *Meanings and Messages: The Complexity of Intercultural Communication*, Chapter 10. Systime Academic Publishers (forthcoming 2006);

Blasco M., and Gustafsson, J. (eds) (2004) *Intercultural Alternatives*. Copenhagen: CBS Press.

Torben Pedersen, team leader of Work Package 4, is a professor at the Department of International Economics and Management. He has worked extensively on internationalization and globalization of business and is currently participating in knowledge management research at the Center for Strategic Management and Globalization. His research is focusing on the governing of knowledge processes in MNCs, i.e. how organizational mechanisms like reward, reputation, and power can be applied across borders in order to facilitate knowledge processes. His recent publications include:

N.J.Foss and T. Pedersen, "Organizing knowledge processes in the multinational corporation", in *Journal of International Business Studies* vol. 35, no.5, S. 340-349, 2004;

Pedersen, Minbaeva, e.a., "MNC knowledge transfer, subsidiary absorptive capacity, and HRM", in *Journal of international business studies*, vol. 34, no. 6, S. 586-599, 2003.

Partner 2 VUB, Evolution, Complexity and COgnition group

The *Vrije Universiteit Brussel* (VUB) is a medium-sized (about 10000 students) Dutch-speaking university with a strong research tradition, situated in the capital of the European Union. The different research groups and departments at the VUB have in the last 20 years successfully organized and participated in dozens of European projects and networks. The Brussels Free University (VUB together with its French-speaking sister university ULB, with which it shares the

same campus) is ranked 54 in the world university rankings of the THES, which is the fifth highest score in continental Europe.

The present proposal will be coordinated by ECCO, the Evolution, Complexity and COgnition group, a recently formed transdisciplinary research center at the VUB. The members of ECCO (4 professors, 3 PostDocs, and about 15 PhD students) come from a wide variety of backgrounds, from physical science and technology to the social sciences and humanities. ECCO's research focuses on the evolution of complex, intelligent organization: how does a collection of interacting agents self-organize so as to develop a social and cognitive structure? We tackle this general issue through a number of more concrete research projects, addressing various theoretical aspects and practical applications, including computer simulations and psychological experiments. ECCO members have published hundreds of papers and books on these subjects, and are regularly adding new working papers to their website (<http://ecco.vub.ac.be>). We moreover publish the electronic Journal of Memetics - Evolutionary Models of Information Transmission. In the past twenty years, ECCO members have organized about a dozen international conferences in the domain.

Francis Heylighen, team leader of WP 1, is director of ECCO, is a research professor affiliated with the interdisciplinary Center Leo Apostel at the Vrije Universiteit Brussel. His research is focused on the self-organization and evolution of complex, cognitive systems, which he approaches from a cybernetic perspective. Heylighen has authored over 90 scientific publications, including a monograph and four edited books. He is editor of the Principia Cybernetica Project, whose well-known, encyclopedic website he administers since 1993. He is editor-in-chief of the Journal of Memetics, and editorial board member of *Informatica*, *Entropy*, and the Journal of Happiness Studies. His work has been cited some 1000 times in scientific publications, and some 70 000 times on the web as a whole (according to Google). Articles about his work have appeared among others in *New Scientist*, *Frankfurter Allgemeine Zeitung*, *Die Zeit*, *Le Monde*, and the *Washington Post*. He is a Fellow of the World Academy of Art and Science, and his biography is listed in *Who's Who in the World* and other international directories. Recent publications include:

Heylighen F. (1999): "Collective Intelligence and its Implementation on the Web: algorithms to develop a collective mental map", *Computational and Mathematical Organization Theory* 5(3), p. 253-280.

Van Overwalle F. & Heylighen F. (2006): "Talking Nets: A Multi-Agent Connectionist Approach to Communication and Trust between Individuals", *Psychological Review* (in press)

Frank Van Overwalle is a full professor affiliated with ECCO and the Department of Psychology at the Vrije Universiteit Brussel. Frank Van Overwalle has authored over 40 peer-refereed scientific publications. His recent research focuses on artificial neural network models of various phenomena in the domain of social cognition at large, to demonstrate the common cognitive processes underlying many social findings. This has resulted in a number of publications in top-ranking journals such as *Psychological Review* and *Personality and Social Psychology Review* with an impact factor (SSCI) between 3 and 7. He is a member of the Royal Flemish Academy of Art and Science's committee of Psychology, the American Psychological Association, and the executive board of the Belgian Federation of Psychologists (BFP). He is a past secretary-general and president of the Belgian Association of Psychological Science (BAPS), and is in the editorial board of the *European Journal of Social Psychology* and *Psychologica Belgica*. Recent publications include:

Van Overwalle, F. & Siebler, F. (2005). A Connectionist Model of Attitude Formation and Change. *Personality and Social Psychology Review*, 9, 231–274.

Van Rooy, D., Van Overwalle, F., Vanhoomissen, T., Labiouse, C. & French, R. (2003). A recurrent connectionist model of group biases. *Psychological Review*, 110, 536-563.

Partner 3: ICT&S Center, Paris Lodron University of Salzburg (PLUS)

The Center for Advanced Studies and Research in Information and Communication Technologies & Society (ICT&S) was established as an independent interfaculty research and study center within the University of Salzburg to drive interdisciplinary work and activities. The central vision is to face

the challenges of the interrelationship between technology and society on several levels (from the individual level to the organizational level and the societal level as a whole) and deliver interdisciplinary solutions for the fields of business, technology, science, policy and culture. One important field of research is the interrelationship between ICTs and culture. The ICT&S Center offers a framework towards building inter- and transdisciplinary relationships applicable to the challenges of the upcoming information and knowledge-based society. It's the Center's philosophy to explicitly focus on the problems where individual disciplines are reaching their limits.

The eTheory competence unit of the Center provides expertise in theories of the information and knowledge-based society, social system theories, theories of social system design and theories of self-organisation. These approaches lay the foundation for a theory of Collective Intelligence. The research of the PLUS team will focus on:

- The analysis of Wikipedia as an expression of Collective Intelligence
- The integration of concepts like knowledge management, distributed cognition, learning and creativity for a new understanding of Collective Intelligence
- Recommendations for a collectively intelligent design of a cultural diverse European Union

Wolfgang Hofkirchner (1953), team leader of WP2 and WP6, is a Dr.phil. in political science and psychology. After his activity as a research fellow at the Institute of Socio-economic Research and Technology Assessment at the Austrian Academy of Science, he has been assistant professor at the Social Cybernetics Group, Institute of Design and Technology Assessment, Department of Computer Science, Vienna University of Technology. Since his habilitation in 2000 he is associate professor for technology assessment at the Vienna University of Technology. Since October 2004 he holds a professorship in Internet and Society at the ICT&S Center at the University of Salzburg. His fields of research have been science-technology-society, especially theories of information society, concepts of information and information science, and philosophical aspects of technology design and technology assessment. Recent publications include:

Hofkirchner, Wolfgang/Fuchs, Christian (2005) "Self-Organization, Knowledge, and Responsibility". In: *Kybernetes, Special Issue on Heinz von Foerster*, Vol. 34, No. 1-2, pp. 241-260.

Hofkirchner, Wolfgang (2004) Unity Through Diversity. Dialectics – Systems Thinking – Semiotics. In: Arlt, H. (Ed.), *The Unifying Aspects of Cultures*, INST, Wien, ISBN 3-9501947-0-3, CD-ROM

Manfred Tscheligi is one of the key persons involved in developing the field of usability studies and Human Computer Interaction in Europe, distinguished speaker at conferences, workshops, tutorials and seminars, author of several publications. He has been initiating and managing a broad variety of research and industrial projects. Being a member of various national and international expert, advisory and conference committees (e.g. CHI conference series), his work is based mainly on the interdisciplinary synergy of different fields to enrich the interaction between humans and systems., Manfred Tscheligi is the first full professor assigned to the new ICT&S Center. Manfred Tscheligi holds a master's degree in business informatics and PhD in social and economic science (specialisation in: applied computer science). Being an associate professor for applied computer science at the University of Vienna, he has been very active in the field for more than ten years.

Tscheligi, M., Bernhaupt, R. and Mihalic, K. (Hrsg) (2005) *MobileHCI 2005 - Proceedings of the 7th international Conference on Human Computer interaction with Mobile Devices & Services*. Salzburg, Austria, September 19 - 22, 2005. N.Y.: ACM Press

Christian Fuchs is a DI Dr. in Computer Science and a Dr.techn. since 2002, a lecturer in the field of Information Society Research. He has been a research assistant in the INTAS project "Human Strategies of Complexity" at the Institute of Design and Technology Assessment, Vienna University of Technology, and joined the ICT&S Center in 2005. His research fields are Internet and society, systems theory, and social theory. He has published more than 50 contributions in the fields of Information Society Theory, Social Theory, and Systems Thinking, including 5 monographs and 2 anthologies. He is Managing Editor of "tripleC (E-Journal for Cognition, Communication, and Co-

operation"), Consulting Editor of the journal "Cybernetics and Human Knowing", and member of the Editorial Advisory & Review Board of the "Journal of Knowledge Management Practice". Recent publications include:

Fuchs, Christian (2005) "Knowledge and Society from the Perspective of the Unified Theory of Information (UTI) Approach". In: Proceedings of FIS 2005: *Third Conference on the Foundations of Information Science*. Paris, July 4-7, 2005. <http://www.mdpi.org/fis2005/proceedings.html>

Fuchs, Christian (2005) "Self-Organization and Knowledge Management". In: O.Neumaier/C.Sedmak/ M.Zichy (Ed.) *Philosophische Perspektiven. Beiträge zum VII. Internationalen Kongress der ÖGP*. Frankfurt/M.–Lancaster. Ontos. pp. 351-356.

Ursula Maier-Rabler graduated in Communication and Psychology at University of Salzburg. She is Assistant Professor at the Department of Communication at the University of Salzburg and academic director of the Center of Advanced Studies and Research in Information and Communication Technologies & Society (ICT&S) at the University of Salzburg.

Maier-Rabler, U.: Reconceptualizing e-Policy. Cultural Aspects and Digital Divide in Europe. In: Sarikakis, Katharine / Thussu, Daya (Eds.): *Ideology of the Internet*. (will be published 2006)

Partner 4: AEGEAN, Department of Product & Systems Design Engineering, University of the Aegean

The University of the Aegean (<http://www.aegean.gr>) is a relatively new state supported higher education establishment founded in 1984. Within the University, the department of Product and Systems Design Engineering, www.syros.aegean.gr is the first of its kind in Greece, and a very novel type of department. Research is centered on the understanding of how systems might be made to adapt to users' evolving needs, examining the case of nomadic users, users with disabilities and/or in handicapping situations. DPSD researchers examine users with differing device profiles, the design of user profiles, user interaction agents, and the use of metadata, as well as different paradigms of interaction such as interactive digital television and virtual reality environments, and sketch based input.

The department has been involved (lead or participated) in several European and nationally funded projects, including GUARDIANS, IDCnet, ARCHEOGUIDE, GESTALT and AMODEUS.

Key personnel in the CODEC project:

Professor John Darzentas (BSc Athens Greece; MSc Sussex UK, PhD London UK), team leader of Work Package 5, is Chair of Operational Research and Head of the Department of Product and Systems Design Engineering.

He has held academic positions around Europe, including lectureships at the Universities in London and Reading in the UK. He has collaborated in and led many research projects, both in the UK and Greece as well as projects funded by the European Union on a range of subjects, including Systems Thinking; Decision Support; Simulation; Knowledge Management; Learning Technologies Human Computer Interaction; Design and e-Accessibility.

He is on the editorial board of several journals, and the author of a substantial number of papers in scientific journals and books. He is the Greek National representative to IFIP (International Federation of Information Processing) Technical Committee 13 (HCI), and ICSID (International Council of Societies of Industrial Design).

Dr. Thomas Spyrou is an Assistant Professor in the Department of Product and Systems Design Engineering, and is also Technical Director of AegaiNet, the network linking the distributed campus of the Aegean University (www.aegean.gr) as well as providing services to other educational communities of the Aegean- schools and training centres- though high speed networks. He is an executive member of the technical committees of GUnet (Greek Universities Network) GRnet (Greek Research and Technology Network) and EDUnet (Network for Greek Secondary Education). He has participated in and led projects both funded nationally and by the European Union. He has published in scientific journals and participated in national and international conferences, in the areas of information systems, artificial intelligence, decision support systems, intelligent tutoring systems, simulation and security.

Recent relevant publications:

Argyris Arnellos , Thomas Spyrou , John Darzentas (2005). *A Framework Supporting Creativity in the Design Process: A Systems-theoretic Perspective*, in the 6th international conference of the European Academy of Design, March 29-31 2005, University of the Arts, Bremen, Germany.

Modestos Stavrakis, Thomas Spyrou , John Darzentas (2006) Software and art as influential means to creativity, submitted to the *Journal of Digital Creativity*.

Partner 5: SCAI, The Skövde Cognition & Artificial Intelligence Lab

The SCAI Lab is part of the *School of Humanities and Informatics* (SHI) at the University of Skövde. With three undergraduate programs in computer game development with a total of more than 200 students, SHI is a leading provider of academic computer game-related education. The SCAI Lab is jointly directed by professors Tom Ziemke and Lars Niklasson and currently consists of two full professors, one guest professor, three assistant professors, two postdocs, and about twenty PhD students. Research spans from theoretical work on situated/distributed/embodied cognition over empirical research on the situated and social nature of computer gaming to applied research on information fusion and decision support in cooperation with industry.

Tom Ziemke, team leader of WP7, full professor of cognitive science since 2002, holds a German diploma in informatics and business management, a Swedish MSc in computer science, and a PhD degree from the University of Sheffield (UK). Most of his research is concerned with embodied and distributed cognition, in particular theories and models of how cognitive processes are shaped by bodily interaction with the material and social environment. Ziemke is coordinator of a recently started EC-funded four-year integrated project called "*Integrating Cognition, Emotion and Autonomy*" (IST-027819) and member of the executive committee of the EC-funded coordination action project *euCognition - The European Network for the Advancement of Artificial Cognitive Systems*. He is associate editor of the journals *New Ideas in Psychology* and *Connection Science*. Recent publications include:

Ziemke, Zlatev & Frank (eds.) (in press). *Body, Language, and Mind - Vol.1: Embodiment*. Berlin: Mouton de Gruyter (Cognitive Linguistics Research series).

Ziemke (2005). Cybernetics and Embodied Cognition: On the Construction of Realities in Organisms and Robots. *Kybernetes*, 34(1/2), 118-128.

Daniel Pargman, assistant professor of media studies, received his PhD in 2000 with a thesis on online games and virtual communities. His current research focuses on computer gaming as a situated and social activity and the interaction of virtual and real-world culture. His research interests are also strongly reflected in his teaching activities: among other things, he has developed and taught a PhD course on "*Social interaction and the design of virtual communities*" and supervised a dozen masters projects on the theme "*Money and economy in and around online games*". His publications include:

Pargman (2000). *Code begets community: On social and technical aspects of managing a virtual community*. Ph.D. thesis, Department of Communication Studies, The Tema Institute, Linköping University, Sweden.

Pargman & Eriksson (2005). Law, order and conflicts of interest in massively multiplayer online games. In *Digital Games Research Conference 2005, Changing Views: Worlds in Play*, June 16-20, 2005, Vancouver, British Columbia, Canada. 2005.

B.5 Project management

This section describes the structures, responsibilities and lines of communication on which the Project Management WP is based. The management methodology is designed to provide close monitoring and reporting, while imposing the lightest burden on research, design and development teams whose main purpose is to implement the work described in the proposal.

The Project Manager (Sven Bislev, Copenhagen Business School) will be assisted by the CBS Administration (Ms. Tina Varberg, at the Department of Intercultural Communication and Management) in the financial and administrative issues with the European Commission and the

Consortium members. CBS will provide the project coordination and financial management services, including liaison with the EC and the project officers, and will represent the consortium at Concertation meetings.

Project Co-ordination Committee

The CODEC project will have a single management body (Project Coordination Committee, PCC) that will take care of both the management coordination, and scientific and technical coordination. The Consortium does not deem to be necessary the variety of management instruments suggested by the EC for Integrated Projects. The responsibilities of the different partners will be made explicit in the Consortium Agreement, to be signed before the beginning of the project.

The PCC will be composed of five members. Each full partner will have a Partner Representative in the PCC with voting rights. Each partner will also appoint a deputy to be nominated upon the project start. The PCC is responsible for:

- supporting the Co-ordinator in fulfilling obligations towards the European Commission
- ensuring that all work meets functional requirements
- providing project management in relation to the activities of the WPs on technical, financial and/or exploitation/dissemination issues, as applicable
- reviewing and proposing budget transfers in accordance with the Contract and the annual Implementation Plan
- proposing changes in work sharing and budget,
- agreeing on press releases and joint publications by the Parties with regard to the Project, and
- Conflict resolution (see below).

The PCC is the only body that can take contractually binding decisions on the project's behalf, and will have clear voting rules and regulations. Ordinary PCC meetings will coincide with consortium meetings; extraordinary PCC meetings shall be called by two Consortium members, at least. In general, consortium meetings will take place twice a year, although additional meetings can be held for project reviews, key milestones, etc.

The project co-ordinator is the single point of contact between the European Commission and the Consortium. In this function the Co-ordinator shall:

- collect from all Parties the cost and other statements for submission to the European Commission,
- prepare, with the support of the members of the Project Co-ordination Committee, the reports and project documents required by the European Commission, and
- ensure prompt delivery of all software and data identified as deliverable items in the Contract or requested by the European Commission for reviews and audits, including the results of the financial audits prepared by independent auditors.

The Co-ordinator is responsible for the following tasks and functions:

- overall management of the Project with the support of a project administrator,
- chairing the Project Co-ordination Committee, and
- preparation of the meetings and decisions of the Project Co-ordination Committee.

The workpackage leaders are in charge of the coordination and performance of work packages.

Specific tasks for workpackage leaders are to:

- Ensure accomplishment of the technical objectives of the workpackage.
- Log decisions related to the progress of the workpackage.
- Coordinate the production of the deliverables;
- Flag insufficient quality or unacceptable delays in the contribution of individual members.
- Collaborate with the PCC and the project manager in order to ensure the value and convergence of workpackage results relative to the overall project objectives.
- Collaborate with the project manager in order to ensure the financial and administrative compatibility relative to the overall project administration.

Conflict resolution

All disputes or differences arising in connection with the proposal which cannot be settled amicably shall be finally settled by arbitration in Brussels under the rules of arbitration of the International Chamber of Commerce by one or more arbitrators to be appointed under the terms of those rules. In any arbitration in which there are three arbitrators, the chairman shall be of juridical education.

The award of the arbitration will be final and binding upon the parties concerned. The Parties may instead elect to resolve by mediation a dispute or difference arising in connection with this Consortium Agreement which cannot be settled amicably.

Management of Intellectual Property

Before the beginning of the project, a Consortium Agreement will be signed stating all IPR issues, including existing knowledge issues.

Management support tools

The support tools to be used in the project lifetime are:

- A Web-based collaborative software. A project workspace will be constructed if the project is approved. There partners exchange documents and data relevant to the project. The collaboration software provides a set of tools that help project management: document management functions (including versioning), calendar and meeting functions, email, newsgroups, etc. This tool has proved its effectiveness in many national and international projects.
- An e-mail distribution list also set for the preparation of the proposal, where partners exchange information, ideas and opinions. The list may be also used as a bi-lateral communication information tool between partners, keeping the other partners informed of the progress in project tasks.
- Periodic telephone conferences, with a periodicity to be set, where consortium members discuss project issues and project progress.
- Bi-lateral telephone meetings between project partners, focused on particular tasks of the project.
- A project Web site, used as a dissemination tool.
- Software tools. The Consortium members will agree in different software tools and common formats to exchange documents, and ensure interoperability.

The communication language among the project partners and with the European Commission will be English.

B.6 Detailed Implementation plan

The CODEC projects are organized in 8 Work Packages. Each has a team leader at the partner institution that has primary responsibility for the WP (see A2 Appendices). Each team leader is responsible for the performance of the work of one Work Package project, including the involvement and cooperation with other partners, and for the reporting obligations, administratively as well as academically.

Most WPs involve co-operation among two or more partners. WP 2 is charged with advancing the overall theoretical framework, both as an introductory exercise and as a final synthesis, and is thus a cooperative venture for all senior researchers.

During the 3 years of the project's lifetime, bi-annual coordination meetings will take care of both administrative issues of common interest, and academic exchange. An internet portal will be

established to serve as the platform for exchange of information, ideas and results, especially in periods between the meetings.

Work package 1 (month 1-24) is a computer simulation of the collective development of culture. In extension of earlier work on computer simulation of collective and distributed cognition, this WP will test some of the assumptions behind the project's research aims, and provide input into both the theoretical work and the empirical case studies.

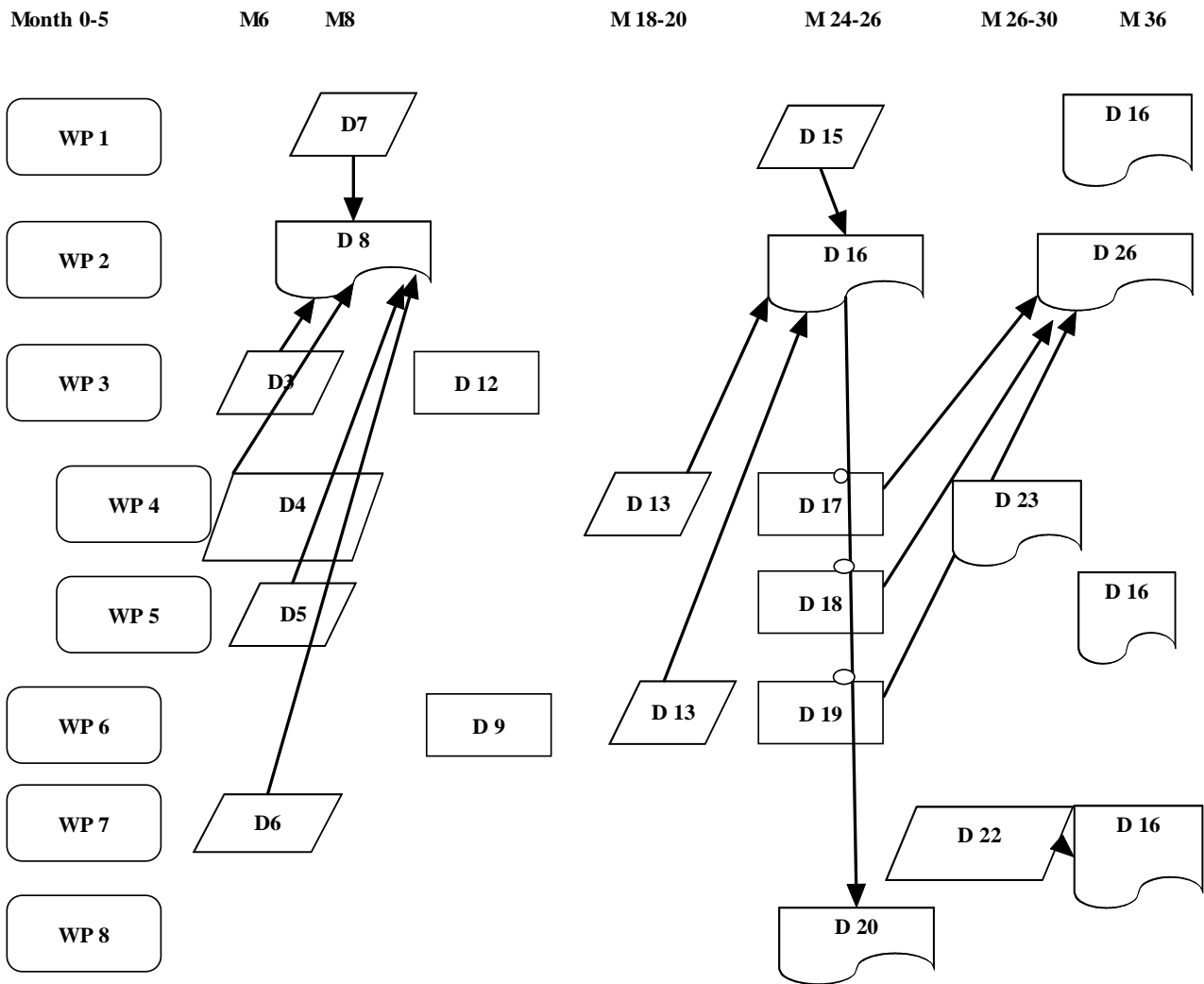
Work package 2 (month 1-36) about theories of culture and self-organization is the theoretical node of the CODEC project. It works on the necessary transdisciplinarity of this kind of research, providing, first, an overview of the different theories, methods and approaches from the other WPs, then organizes the academic discussions that will further advance the theoretical work. Some research already exists in the interface of social science, humanities and cognitive science. This project will contribute two new important new elements: pull together the discussion in cognitive science of emergent collective intelligence with the discussion among economic and cultural sociologists of diversity and innovation; and, to firmly anchor the discussion in reality, provide case studies to expand the understanding of these phenomena.

Work package 3: (month 1-30) is a case study of higher education and global culture, intended to provide results on the globalized production of collective intelligence in high context cultural environments. It examines the emerging elements of a new global culture of higher education, where norms are shared across a number of cultural divides, and new communities are created through interaction and cooperative work. Extending earlier work on the globalization of higher education, where such new global elements have been identified, students and professors in different countries are surveyed in the effort to identify elements of a global educational culture, and to investigate the effects it has on the global advancement of knowledge.

Work package 4 (month 4-36) is a case study of knowledge management, culture, and collective intelligence. In terms of the dissemination and operational usefulness of CODEC, this is an important WP. If the productive potentials involved in emergent collective intelligence are to be realized and utilized, techniques for the harvesting of those beneficial effects must be developed. That requires a theoretical effort to identify and understand those processes and operationalize such relevant insights as are already accessible. The emerging discipline of "knowledge management" provides a perspective on that task, but has to be brought up to date with the new forms of socialization and cultural development inherent in contemporary sociality. WP 4 is a post doctoral project, to be pursued in collaboration with the CBS Center for Strategic Management and Globalization that has a number of specialists in knowledge management.

Work package 5 (month 5-30) is a case study on collective creativity. One important aspect of CODEC is to support and exploit the emergence of collective intelligence in innovative processes. This WP is led by the Department of Product & Systems Design Engineering, where creativity and design processes are studied in theoretical and practical detail. Most contemporary design processes do not rest on the generation of individual ideas, but on systematic cooperation in collective projects, where the diversity of participants is an important feature. This project will study the processes of communication, cognition and cooperation that take part in the self-organisation of a group of designers towards creative solutions to real world problems would be analytically and empirically examined. The factors and the characteristics of the underlying dynamics that enhance and support or/and impede and hinder the emergence of collective creativity among the community of designers are identified. The results of the analysis of three design processes will be compared to the state-of-the-art models of collective and individual creativity in order to test assumptions and promote the theoretical and methodological understanding of the process. WP 5 provides useful data that would be further examined via simulations of multi-agent systems.in WP 1. The results will be used for the

CODEC - simplified Pert diagram



B.7 Other issues

CODEC does not envision studies that are invasive on morally or politically sensitive issues. It does, naturally, impact on gender, ethics and policy issues of various kinds:

B.7.1 Ethics: in all empirical research addressing human cognition and action, privacy issues may emerge. In those work elements - particularly the studies of higher education and collective creativity - where this may be the case, the privacy of studied populations will be respected.

B.7.2. Gender: existing studies show that cultural developments frequently have significant gender dimensions. Several partners in the consortium have researchers interested in gender perspectives, and the intention - not yet negotiated among participant partners - is to include gender dimensions in the analytical work where at all possible.

B.7.3. Policy: the project does not infringe on existing EU policies in a direct sense. As mentioned in the “impact” section, it does have relevance to a number of policy issues and aims to provide constructive inputs to those.

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STREP Project Effort Form
Full duration of project

Project acronym - CODEC

	Participant 1 CBS	Participant 2 VUB	Participant 3 PLUS	Participant 4 AEGEAN	Participant 5 SCAI
Research/innovation activities					
WP 1: Computer simulation of the collective development of culture		50	2		2
WP 2: Theories of culture and self-organisation	2	2	12	2	2
WP 3: Higher Education and Global Culture	8		2		
WP 4: Knowledge Management and Collective Intelligence	24		2	2	
WP 5: Collective Creativity	2	2	2	22	2
WP 6: Case Study of Cultural Dynamics in Wikipedia			24	2	2
WP 7: Cultural Dynamics in Online Game Communities		2	2	2	38
(WP 8: Project Coordination)					
Total research/innovation	36	56	46	30	46
Consortium management activities					
Management	10				
TOTAL ACTIVITIES	46	56	46	30	46

Workpackage list (full duration of project)

Work-package No ²	Workpackage title	Lead contractor No ³	Person-months ⁴	Start month ⁵	End month ⁶	Deliverable No ⁷
1	Computer Simulation of the Collective Development of Culture	2	54	0	24	7, 15, 24
2	Theories of Culture and Self-organization	3	20	0	36	8, 16, 26
3	Higher Education and Global Culture	1	10	0	30	3, 12, 21
4	Knowledge Management and Collective Intelligence	1	28	4	36	4, 13, 17, 23
5	Collective Creativity	4	30	5	30	5, 18, 25
6	Case Study of Cultural Dynamics in Wikipedia	3	28	0	30	9, 14, 19
7	Cultural Dynamics in Online Game Communities	5	44	0	36	6, 22, 27
8	Project Coordination	1	10	0	36	1, 2, 10, 11, 20
	TOTAL		224			

² Workpackage number: WP 1 – WP n.

³ Number of the contractor leading the work in this workpackage.

⁴ The total number of person-months allocated to each workpackage.

⁵ Relative start date for the work in the specific workpackages, month 0 marking the start of the project, and all other start dates being relative to this start date.

⁶ Relative end date, month 0 marking the start of the project, and all ends dates being relative to this start date.

⁷ Deliverable number: Number for the deliverable(s)/result(s) mentioned in the workpackage: D1 - Dn.

Deliverables list (full duration of project)

Deliverable No⁸	Deliverable title	Delivery date⁹	Nature¹⁰	Dissemination level¹¹
1	Consortium contract WP8	03	O	RE
2	Communication portal WP8	03	O	PU
3	Questionnaire WP3	06	O	RE
4	Theoretical paper on knowledge management WP4	06	R	PU
5	Two reports summarizing results of review and analysis WP5	06	R	PU
6	Report summarizing results of initial phase WP7	06	R	PU
7	Multi-agent software system WP1	08	O	PU
8	Phase A report WP2	08	R	PU
9	Report on “Wikipedia – a case for collective intelligence” WP6	10	R	PU
10	Annual financial reports WP8	12,24,36	R	RE
11	Annual progress reports WP8	12,24,36	R	RE
12	Halfway report WP3	16	R	RE
13	Two case study reports WP4	18	R	RE
14	Report on “Wikipedia – empirical findings” WP6	20	R	PU
15	Report describing simulation results WP1	24	R	RE

⁸ Deliverable numbers in order of delivery dates: D1 – Dn

⁹ Month in which the deliverables will be available. Month 0 marking the start of the project, and all delivery dates being relative to this start date.

¹⁰ Please indicate the nature of the deliverable using one of the following codes:

R = Report
P = Prototype
D = Demonstrator
O = Other

¹¹ Please indicate the dissemination level using one of the following codes:

PU = Public
PP = Restricted to other programme participants (including the Commission Services).
RE = Restricted to a group specified by the consortium (including the Commission Services).
CO = Confidential, only for members of the consortium (including the Commission Services).

16	Phase B report WP2	24	R	RE
17	Analytical report WP4	24	R	PU
18	Individual reports on 3 case studies WP5	24	R	RE
19	Final report on “Cultural dynamics in Wikipedia” WP6	24	R	PU
20	Dissemination materials WP8	26	O	PU
21	End report WP3	30	R	PU
22	Individual reports of case studies WP7	30	R	RE
23	Outreach effort – operationalizing insights WP4	32	R	PU
24	Papers discussing implication of simulation WP1	36	R	PU
25	Joint integrated final report Wp5	36	R	PU
26	End report WP2	36	R	PU
27	Joint integrated final report WP7	36	R	PU

Workpackage description (full duration of project)

Workpackage number	1	Start date or starting event:	Project Month 0	
Workpackage title:	Computer simulation of the collective development of culture			
Participant id	VUB	SCAI	PLUS	
Person-months per participant:	50	2	2	

Objectives

The basic objective is to elaborate, operationalize and test our developing model of the collective development of culture by means of a sophisticated multi-agent computer simulation, where agents represent individuals endowed with basic abilities of communication and cognition, that interact, trying to coordinate their knowledge.

The second objective is to draw different implications from this simulation that will form an input to the overall theoretical development and to the issues investigated by the other, more empirical workpackages.

Description of work

A first step is to specify the theoretical assumptions underlying the overall project in such a way that they can be programmed as rules guiding the interactions between intelligent software agents.

Our starting hypothesis is that agents process incoming information depending on the knowledge they already have, selectively retain some of that information in their memory, and selectively express some of that information to other agents. Generally, the transmission of information by an agent will change both the agent, who has learned something new, and the information, which may be affected by the knowledge the agent already had. Therefore, a communication reaching an agent, if it is transmitted at all, will typically be transmitted in a mutated form, possibly recombined with other information learned earlier.

This requires agents with flexible and realistic learning capabilities. For this, we plan to use neural network representations of the agent's cognitive abilities [Van Overwalle & Heylighen, 2006]. Information processing happens when nodes in the agent's network are activated by outside input (either coming from perception of the environment, or from a communication transmitted by another agent). This activation then spreads inside the network using the existing connections to reach an equilibrium configuration that represents the interpretation of the information. Using the Delta learning algorithm, the connections strengths are updated each time information is processed, so that the agents acquire better knowledge by experience.

To simulate agents with different experiences, we will first individually "train" each agent by subjecting it to a unique combination of inputs. One way to make this learning more realistic is to immerse the agent in a complex, virtual environment, such as the KEBA virtual laboratory that the VUB group developed earlier [Gershenson, 2003, 2004]. An agent equipped with sensors and effectors will experience different aspects of that environment depending on the particular trajectory of movements and actions that the agent performs. If we make sure that the trajectories or environmental situations are different, different agents will build up different conceptualizations and ways to act upon this environment.

In a second stage, we will let the agents communicate so as to coordinate their conceptualizations. A excellent paradigm for such an interaction is that of the "language game", which was developed in the AI-lab of the VUB in order to study the development of a shared language [e.g. Belpaeme, 2001; Steels, 1998]. In such an interaction, two agents using different "words" to designate phenomena in their shared environment, via trial-and-error try to reach a consensus on which words to use to refer to which phenomena. In the present simulation, however, we are not so much interested in the development of a shared language, but more generally in that of a shared culture, by which we mean a set of cognitive and behavioral rules. This means first that agents should reach a consensus on how to categorize the phenomena they perceive. This can be achieved by means of a slightly modified "discrimination game" [Steels, 1998; Gershenson & Heylighen, 2004]. Second, they should reach a consensus on how to interpret or react to the phenomena they perceive (shared meaning). Here we can use the reinforcement learning paradigm, having agents rewarded when they react in the same way, and "punished" when they react in conflicting ways. This reinforcement signal will strengthen the neural connections that lead to more coordinated actions, and weaken the others.

In the third stage, we extend one-to-one interactions between agents to interactions between all agents in the collective. This allows the local coordination between pairs of agents to extend potentially across the whole group. There are different possible configurations to arrange these interactions. In the simplest configuration, all agents interact equally (or randomly) with all other agents. This is likely to produce a single, homogeneous culture. In a somewhat more complex configuration, we aggregate the agents in different subgroups, and have them interact mostly within their "in-group" while having little contact with other, "out-groups". This is likely to produce a number of relatively independent subcultures. A yet more complex configuration is the one where agents are distributed over a 2-dimensional space (grid) and communicate only with their neighbors.

This may give rise to "regional" cultures that shift gradually into each other. Perhaps the most realistic configuration is a self-organizing social network. Here agents initially interact randomly, but on the basis of this interaction develop a preference for interacting with those agents whose interpretations and reactions are most similar to their own. This leads to a self-reinforcing dynamics: if two agents happen to already have a similar "world view" their mutual coordination will be easier, leading to a more similar view. The more similar their view, the more they will interact, and therefore the more similar their views will become. On the other hand, they will reduce their interaction with agents whose views are inconsistent with their own, and therefore be unlikely to achieve any consensus with them. This may be a model of how different subcultures arise within a globalized world in which anybody can in principle communicate with anybody else, but in practice tends to remain within a restricted, "virtual community" of like-minded people.

Finally, there is the "stigmergic" configuration, in which agents do not communicate one-to-one but only via a shared repository of information (similar to people collaborating on Wikipedia). Here "subcultures" may emerge within the repository.

In the last stage we will qualitatively and quantitatively analyse the dynamics of culture development in each of the different configurations. We will in particular explore different settings of the parameters (e.g. number of agents, diversity, learning speed, amount or intensity of interactions, number of subgroups...) to see how they affect the outcome (number and strength of cultures, degree to which individual agents can deviate from the dominant culture, collective intelligence, i.e. degree to which the collectively developed knowledge of the environment is better than the individually acquired one). We will moreover explore the effect of as yet unknown factors that are suggested by the theoretical and empirical research in the other WPs. This should allow us to formulate answers to the main research questions of the overall proposal, i.e. identifying the different obstacles and facilitators of the process of collective culture development, and determining the role of diversity, communication media, agent identity, etc. Vice-versa, the results from this simulation should provide inspiration to the other workpackages about factors to pay special attention to, so that they can check whether the phenomena emerging from the simulation also occur in reality.

References

- Belpaeme T. (2001) Reaching coherent color categories through communication. In Kröse, B. et al. (eds.), *Proc. 13th Belgium-Netherlands Conference on AI*, Amsterdam, p. 41-48.
- Gershenson C. (2003). Comparing Different Cognitive Paradigms with a Virtual Laboratory. *IJCAI-03: Proceedings of the Eighteenth International Joint Conference on Artificial Intelligence*, pp. 1635-6. Morgan Kaufmann.
- Gershenson C., Heylighen F. (2004b): Protocol Requirements for Self-organizing Artifacts: Towards an Ambient Intelligence, in: *Proc. Int. Conf. on Complex Systems* (New England Institute of Complex Systems)
- Steels L. (1998): Synthesising the origins of language and meaning using co-evolution, self-organisation and level formation, in Hurford et al. (eds): *Approaches to the evolution of language* (Cambridge University Press), p. 384-404.
- Van Overwalle, F., & Heylighen, F. (2006): Talking Nets: A Multi-Agent Connectionist Approach to Communication and Trust between Individuals, *Psychological Review* [in press]

Deliverables

A multi-agent software system allowing the simulation of culture development.

A report describing the simulation results under different conditions and parameter values.

One or more papers discussing the implications of this simulation for a general understanding of the collective development of culture.

Milestones and expected result

Milestones:

Month 8: end of the implementation of the software system, and start of the actual simulation

Month 24: conclusion of the statistical analysis of the data collected from the simulation, and production of the report

Month 36: delivery of final paper with implications

Expected Results:

a detailed understanding of how fundamental cognitive and communicative factors affect the development of a shared culture between agents

Workpackage number	2	Start date or starting event:				Project Month 0	
Workpackage title : Theories of Culture and Self-organisation							
Participant id	PLUS	SCAI	VUB	AEGEAN	CBS		
Person-months per participant	12	2	2	2	2		

Objectives

- To substantiate the unity-through-diversity principle for cultural intercourse by theoretical insights
- To theorise culture as a self-organising phenomenon
- To define “collective intelligence” in terms of culture
- To integrate generalisations from WP 3-7 on education, knowledge management, creativity, on-line encyclopedias, and MUDs in a theory of the collective development of culture
- To lay the foundation for simulating the cases of education, knowledge management, creativity, on-line encyclopedias, and MUDs in an agent-based model

Description of work

In phase A, categories are worked out that serve as a framework for the study of education, knowledge management, creativity, on-line encyclopedias, and MUDs in WP 3-7. In parallel, these categories are designed to feed the agent-based model.

In a second phase, the results of WP 3-7 build the input for the generalisation.

In a third phase, the simulation results of WP 1 are fed back to theory and modify it.

Deliverables

Phase A report: month 8

Phase B report: month 24

End report: month 36

Milestones and expected result

Phase A report: month 6: Input in the planning of research in WPs 1, 3-7

Phase B report: month 24: Feedback process between the different subprojects

Expected Results: a theory of the collective development of culture, integrating the social science of cultures and diversity with the cognitive analyses of emergent effects, distribution and diversification.

Workpackage number	3	Start date or starting event:				Project Month 0
Workpackage title : Higher Education and Global Culture						
Participant id	CBS	AEGEAN				
Person-months per participant	8	2				

Objectives

This WP examines the emerging elements of a new global culture of higher education, where norms are shared across a number of cultural divides, and new communities are created through interaction and cooperative work.

Institutions of higher education are undergoing a rapid process of globalization. An increasing number of research groups and international study programmes bring large groups of different people together in institutions that remain different but evolve towards new modes of association and cooperation. This WP examines the emerging elements of a new global culture of higher education, where norms are shared across a number of cultural divides, and new communities are created through interaction and cooperative work. Extending earlier work on the globalization of higher education, students and professors in different countries are surveyed in this effort whose aim is to identify elements of a global educational culture, and to investigate the effects they have on the global advancement of knowledge.

Description of work

This project extends, qualifies and deepens an existing study of the globalization of higher education (Kragh & Bislev, 2005). That study surveyed 800 business school students from 26 countries, all having international experience. They were asked about the university cultures they experienced in the places they had been, and their own preferences. The outcome is a pointer to the fact that cultural globalization is creating a dominant set of meanings and perceptions. The study needs to be extended with surveys of different groups of students, and of professors. On the theoretical level, the study delivers material for analyses of epistemologically relevant values and perceptions, and for analyses of the relation between 'knowledge values' and the wider world of 'societal values'. In the present project, the first analysis will be pursued: what are the values and meanings that emerge out of the growing international interaction in higher education, and in what ways do they affect the global development of knowledge?

Students are a relatively homogenous group in terms of demographics and some social characteristics – their age, their dependence on sources of provision, their openness to innovative thinking, etc. Students in contemporary higher education, however, arrive from different cultural backgrounds in terms of regional and national cultures, and they are exposed to different professional cultures in their study programmes. Professors have, because of the universalist aspirations of science, always had to confront the global realities, but are exposed to harmonizing processes across national cultures.

Institutions of higher education are basically grounded in very strong national cultures, as they have been participants in the creation of national identities and of modernity. From a background of emphasizing the obligations of universities towards nations, however, universities are being forced

to confront the demands of globalization. The culture of education is changing, as the meanings attached to notions of epistemology, cooperation and self-development are changing. The interaction in universities is relatively intensive. Young students live their lives very much in groups, and the formation of friendships in university life is a forceful tradition. Researchers invest much of their personal identities in their professional work, and their commitment is typically life-long and stable. Students are temporary, to an increasing degree: where formerly only upper class students were able to travel to foreign universities, now extensive programmes assist a large number of students in trying out different cultures and searching for the best for them. This intensification of interaction opens up new possibilities and new self-organizing processes whose outcomes are only vaguely anticipated at the moment.

Research Question:

To what degree does a global educational culture emerge out of diverse groups coming together in higher education institutions? How do such elements of a global culture affect the possibilities of advancing global knowledge?

References:

S.U. Kragh and S. Bislev, "Universities and student values across nations", in *Journal of Intercultural Communication*, 2005, issue 9

Deliverables

A questionnaire, usable for all participating partners – month 6

Halfway report: month 16

End report: month 30

Dissemination materials: information materials useful for higher education institutions – month 26

Milestones and expected result

1. Identification of institutions participating in the survey: month 4.

2. distribution of questionnaires: month 8

3. halfway report, analyzing the value of the materials harvested and planning the analytical steps

Results:

- identification of global culture of higher education – how global, how common, how distributed?
- production of information materials for higher education institutions

Workpackage number	4	Start date or starting event:			Project Month 4		
Workpackage title : Knowledge Management and Collective Intelligence							
Participant id	CBS	PLUS	AEGEAN				
Person-months per participant	24	2	2				

Objectives

If the productive potentials involved in emergent collective intelligence are to be realized and utilized, techniques for the harvesting of those beneficial effects must be developed. That requires a theoretical effort to identify and understand those processes and operationalize such relevant insights as are already accessible. The emerging discipline of “knowledge management” provides a perspective on that task, but has to be brought up to date with the new forms of socialization and cultural development inherent in contemporary sociality.

WP 4 is a post doctoral project with the aim of applying the concepts of knowledge management on emerging collective intelligence, taking into account the cultural dynamics involved. The objective is to develop tools for the identification and productive use of collective intelligence, and for the management of cultural development.

Description of work

The post doctoral project will first collect existing research on cultural development as it relates to knowledge management. Secondly, the major part of the project is empirical: to compare two different organizations – most likely, business corporations - and the processes they are involved in, in different cultural settings. The post doc will be working with the Center for Strategic Management and Globalization that has a number of specialists in knowledge management, as well as with the Department of Intercultural Communication and Management, where culture research is highly developed. The third part of the project is to formulate the results in a way that makes it accessible to both academics and informed practitioners who work with knowledge management in intercultural settings.

Knowledge management deals with the handling of knowledge in organized settings – both on a micro and a macro level. Participants can be employees of a business corporation, participants in an alliance, providers of knowledge-based services to other organizations, volunteers in non-profit, state employees in human or security services, etc. Knowledge management is concerned with the efficiency of managing knowledge in such diverse groups and the different conditions and results obtaining in different settings.

An organization is a system of purposeful activity, but also a dynamic system of human interaction. When knowledge is acquired, developed, stored and made accessible, it is manifestly to serve the purpose of the organization, but at the same time, emergent phenomena will occur as a result of the dynamics of interaction. The need for different forms of knowledge management derives from different purposes of different organizations. There may, however, be new phenomena that emerge spontaneously and can be exploited to the benefit of the organization, if the relevant management tools are available.

The focus in this project is on the interplay between culture and organizational mechanism of

knowledge management which has been almost glossed over in the literature. A major reason for the insufficient attention to the role of culture in knowledge processes is that the cultural impact has been generally examined at the societal level. In this project the intention is to unfold the importance of culture in management of knowledge by studying culture at more disaggregated levels. The project will study how knowledge processes play out at different levels in the organization, starting from the individual level to the managerial level. Key research questions will be on how culture affects individuals' knowledge activities e.g.

- how does team culture and company culture affect the individuals' willingness to engage in the creation and sharing of knowledge?
- what are the possibilities for exploiting systematically the collective innovations, the development of cultures and insights, for productive purposes?

Therefore, an important element of the project will be a number of in-depth case studies of knowledge processes in the organization that involves individual knowledge activities as well as knowledge activities at higher levels. The case in-depth study will be combined with a comprehensive survey among individual employees in the organization in order to capture individual perceptions and attitudes on cultural aspects and knowledge issues.

Deliverables:

1. A theoretical paper on knowledge management and emergent phenomena: cultural dynamics and collective intelligence: month 6
2. Two case study reports: month 18
3. An analytical report, comparing the two cases and analyzing their implications: month 24
4. An outreach effort, operationalizing the insights into the practitioners' universe: month 32

Milestones and expected result

1. theoretical paper, indicating which types of data to go for in the case studies: month 6
2. case study reports: month 18
3. analytical report: month 24

Expected results:

A first introduction of notions of emergent effects in the knowledge management discipline.
An empirical and operational treatment of the problem of managing cultural dynamics in an information age organization.

Suggested tools for exploiting emerging collective intelligence in the task of knowledge management, in the situation of cultural globalization.

Workpackage description (full duration of project)

Workpackage number	5	Start date or starting event:				Project Month 5
Workpackage title:	Collective Creativity					
Participant id	AEGEAN	PLUS	SCAI	VUB	CBS	
Person-months per participant:	22	2	2	2	2	

Objectives

- To conduct and analyse three collective (collaborative) design processes in terms of the participants creative activities towards an innovative solution.
- To identify the factors and the characteristics of the underlying dynamics that enhance and support or/and impede and hinder the emergence of collective creativity among a community of designers.
- To assess and compare the results of the analysis of the three design processes with state-of-the-art models of collective creativity.
- To provide a better understanding of the dynamics of collective creativity and a methodology that will enhance the emergence of collective creativity and consensus among a community of designers.

Description of work

The work of WP5 will be organised along the following 5 tasks:

T5.1: Critical review of the state-of-the-art of models of creative process models (at the collective and at the individual level).

T5.2: Analysis and description of a group of designers as a self-organising system and identification of the respective factors/properties/characteristics/parameters that should be taken under consideration and be examined during the experimental procedures of the design community activities.

T5.3: Conduction and analytic recording of the three experimental design procedures based on the theoretical ground provided by T5.2

T5.4: Critical evaluation and comparison of the results of the analysis of the three design activities conducted in T5.3 with the findings of the review conducted in T5.1. so that the results of the empirical research will be linked to the broader theoretical foundations of collective creativity.

T5.5: Introduction of a methodology towards the enhancement of the emergence of collective creativity in collaborative design processes.

Deliverables

Two reports summarizing the results of the critical review conducted in T5.1 and the findings of the analysis in T5.2 respectively: month 6

Individual reports on each of the three case studies, summarizing the relevant findings for both WP-internal and project-level integration of results: 24

Joint integrated final report on the findings and conclusions of the WP with a focus on methodological insights: 36

Milestones and expected result

Milestones:

Project Month 6 when the questions to be addressed in the case studies are specified in detail as well as the methods to be used.

Expected Results:

- a) An increased understanding of the characteristics of the underlying dynamics of the emergence of collective creativity among a community of homogeneous and heterogeneous designers.
- b) Substantial progress in the development of scientific methodological tools for the study and fostering of collective creativity and especially on the understanding of how individual and collective creativity interact.

Workpackage number	6	Start date or starting event:				Project Month 0	
Workpackage title: Case Study of Cultural Dynamics in Wikipedia							
Participant id	PLUS	SCAI	AEGEAN				
Person-months per participant	24	2	2				

Objectives

The overall objective of this WP is to analyze the cultural dynamics of an emerging Collective Intelligence, exemplified by a case study on Wikipedia. Wikipedia is a cultural phenomenon that emerges through networking activities of agents, individuals or groups. The results of this WP will further be integrated in WP2 and in a next step build the basis for computer simulation in WP1.

The specific tasks of this work package are:

- To identify Wikipedia as a cultural phenomenon that emerges due to cooperation of Wikipedians (that use the same technological basis)
- To analyze and describe Wikipedia as a self-organized platform for cultural dynamics and empirically analyze the role of participation in culture-formation
- To empirically examine the “self-healing” – capacity of vandalized articles, i.e. those articles that include abusing or insulting content, provide radical, discriminatory, words and world-views/ perspectives/ dogmas, including questions of vandalizing, flaming or other forms of wanton adulteration
- To analyze and describe Wikipedia as a platform where cultural dynamics is demonstrated by adding and editing contents through uploads, downloads, storage and revision
- To examine how Wikipedia as an expression of Collective Intelligence and cultural dynamics can contribute to global/ world knowledge (that helps to facilitate/ foster coping with problems/ problem solving)

Description of Work:

In order to analyze Wikipedia as a cultural phenomenon, several theoretical approaches and empirical methods will be integrated. The WP is generally based on system theoretical approaches, including the concept of self-organization and network analyses.

In the first phase of the project (months 07-10), a literature analysis of articles, books and already existing studies and surveys on Wikipedia will be conducted for identifying the emergent character and the self-organisation capacity of the Internet platform. By analysing the content of collected articles and examining their history (including edits, new topics, etc.), several conclusions can be made, e.g. concerning a possible assurance of quality and how Wikipedia can contribute to a global knowledge, which provides problem-solving capacity.

In the next, main phase of the project (months 11-20) we will undertake qualitative and quantitative empirical analyses, e.g. surveys with open and closed questions in order to examine for example the cooperation of the Wikipedians and their motivation for participation, the democratic potential of Wikipedia and how it can contribute to Collective Intelligence and probably serve as a “world brain”. The “self-healing” capacity will be in the focus of analyses, e.g. duration of repairing vandalised articles and the treatment of vandalised articles through Wikipedians (i.e. ignoring, revising or deleting). The data will be interpreted and analyzes within in this period too.

The last phase of the project (months 21-24) will be initiated by the summary of the results. Generalisations will be undertaken so as to feed WP2 and WP1.

Summary of Time Schedule of the Workpackage:

Project months 07-10: Based on the theoretical foundations of CI (WP2) the cultural dynamics of Wikipedia will be examined through literature studies and content analyses of existing studies, surveys and publications.

Project months 11-20: Qualitative and quantitative analyses, e.g. face-to-face interviews with Wikipedians and (online based) surveys questioning motivations, conflict potentials, self-improvement and self-healing capacities.

Project months 21-24: Generalisations and editing data as basis for the computer simulation.

Deliverables

Report on “Wikipedia – a case for collective intelligence”: month 10

Report on “Wikipedia – empirical findings”: month 20

Final Report on ”Cultural Dynamics in Wikipedia”: month 24

Milestones and expected result

Milestones:

Project Month 10 when the first report will be delivered and the theoretical work and the content analyses will be finished

Project Month 20 when the empirical studies and the interpretation of data on the Wikipedia-Interviews are finished

Project Month 24 when the third report on generalisations and the data for the Agent Based Model will be delivered

Expected Results:

An assessment of how far cultural dynamics manifested in the Wikipedia project is an expression of collective intelligence.

An understanding of the social and cultural drivers and limitations of a collective intelligence project.

Workpackage number	7	Start date or starting event:				Project Month 0	
Workpackage title: Cultural Dynamics in Online Gaming Communities							
Participant id	SCAI	VUB	PLUS	AEGEAN			
Person-months per participant	38	2	2	2			

Objectives

The main objective of this WP is to investigate different forms of distributed cognition and cultural dynamics in online game communities: (a) the culturally and gender-biased individual perception of online game worlds/communities (originating in different cultures), (b) the cultural differences in the self-organization of social interactions/organizations between different in-themselves culturally homogeneous groups (e.g. groups of different nationalities), and (c) the interaction dynamics and self-organization of culturally heterogeneous groups in international online game communities.

Description of work

The work in this WP will consist of three phases:

- an initial phase (of six months) in which the participating partners (a) jointly assess the state of the art, (b) identify the relevant settings for a number of case studies (to be carried in different online game communities) to investigate the three aspects mentioned above, and (c) identify/develop the methodological repertoire to be used in these cases (taking the method cognitive ethnography as a starting point).
- a phase (of 24 months) during which at least three different case studies (corresponding to the above three aspects/objectives) are carried out and analyzed
- an integration and conclusion phase (of six months) in which the participating partners jointly assess and integrate the results of the case studies, regarding both the cultural (micro-) dynamics that have observed and the methodological insights that have been gained.

Deliverables

Report summarizing the results of the initial phase: month 6

Individual reports on each of the case studies, summarizing the relevant findings for both WP-internal and project-level integration of results: month 30

Joint integrated final report on the findings and conclusions of the WP: month 36

Milestones and expected result

Milestones:

Project Month 6 when the questions to be addressed in the case studies are specified in detail as well as the methods to be used.

Expected Results:

- (a) An increased understanding of online game cultural dynamics with respect to (1) individual players perception of online game cultures/communities, (2) differential cultural dynamics in homogenous groups, (3) self-organization of (inter-) cultural dynamics in culturally heterogeneous groups in international online game communities

(b) Substantial progress in the development of scientific methods for the study of online game cognitive and cultural dynamics and their interaction with real world cultural dynamics.

Workpackage number	8	Start date or starting event:	Project Month 0				
Workpackage title: Project Coordination							
Participant id	CBS						
Person-months per participant	10						

Objectives

To coordinate the administrative side of the CODEC projects, monitoring project progress and the correct and efficient use of project funds.

Description of work

The academic coordination will be shared among team leaders and conducted in mail contact as well as bi-annual meetings among project participants. An internet facility will be constructed for the sharing of information among all participants.

Administrative coordination will be performed by one part-time (12 hours a week) administrator, working at the Department of Intercultural Communication and Management, Copenhagen Business School. This administrator can make use of the financial and other services of the School and will be supported by local specialists.

Deliverables:

- Consortium contract - month 3
- Annual financial reports – month 12, 14, 36
- Annual progress reports – month 12, 14, 36
- Communication portal – month 3

Milestones and expected result

1. Consortium contract formulated and signed – month 3
2. Communication portal – month 3
3. Detailed work plan and plan for meetings – month 3
4. financial and progress reports, months 12, 24 and 36

Ethical issues checklist

Table A. Proposers are requested to fill in the following table

Does your proposed research raise sensitive ethical questions related to:	YES	NO
Human beings		x
Human biological samples		x
Personal data (whether identified by name or not)		x
Genetic information		x
Animals		x

Table B. Proposers are requested to confirm that the proposed research does not involve:

- Research activity aimed at human cloning for reproductive purposes,
- Research activity intended to modify the genetic heritage of human beings which could make such changes heritable¹²
- Research activity intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.

Confirmation : the proposed research involves none of the issues listed in Table B	YES	NO
	x	

¹² Research relating to cancer treatment of the gonads can be financed