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Interface: Software
as Cultural Production

Research Statement
Description of Lévy's research project at the University of Ottawa
Pierre Lévy on Apr 1 2003   **Levy Project**

Description of the research project of the Canada Research Chair in Collective Intelligence at the University of Ottawa. By Pierre Lévy, 1st March 2003

The abilities of human communities to produce, exchange and use knowledge are at the core of the knowledge society and new economy. Our research project aims at setting up a new transdisciplinary research field which precisely studies the "cognitive power" of groups. This power is largely based on the optimized use of new communication techniques for intellectual collaboration, but also on the deliberate improvement of cultural and social factors. A better understanding of the collective intelligence phenomena must help boosting the aptitudes to learn and innovate in the companies, the local communities, as well as within self organizing co-operative virtual networks in the fields of education and health on the Internet.

I) Theoretical Research

A) Theory of collective intelligence

The theory of collective intelligence that we develop and test in our research takes into account four interdependent factors:

> **1) the use of interconnected computers and the access to the Internet;**
> **2) the availability and ability of exploiting an abundant and coherent recorded memory;**
> **3) a dense and suitable "social bond" to maintain trust among the considered community members;**
> **4) a variety of complementary experiences and competences, joined to a capacity of the group to self-evaluation and questioning.**

In order to make these factors measurable, we developed a model which represents them by four inter-connected networks: computer networks (the technical capital), document networks (the cultural capital), people networks (the social capital) and finally networks of competences (intellectual capital) relying on the three precedents. The measurement and the calculation of *the Collective Intelligence Capital* and its variations depend in particular on the number and the structure of the nodes and the links in these four networks. For more details, see: **Powerpoint file 1**

B) Design and conception of a software implementing the theory

A "free" software incorporating this model and able to visually represent the dynamics of the processes of intellectual co-operation in the human communities will be programmed, used and tested by our international research team and placed at the disposal of the public on the Web site of the Canada Research Chair in Collective Intelligence (CRC-CI) of the University of Ottawa. The software, called "The Collective Intelligence Game" will have four main functions:

The first is to *coordinate research* aiming at understanding and improving the phenomena of collaboration in the activities of research, invention, learning, transmission and exchange of knowledge which are at the core of the knowledge society.

The second is to allow interested communities (institutions, companies, local communities, virtual networks, etc.) to represent for themselves their mechanisms of collaboration, as well as the principal factors which influence them, in order to *improve their collective intelligence*.

The third objective is to use the statistics available on education, culture, economy, society, demography, etc., in order to produce - from these data - some *images* of the structure and the evolution of the collective intelligence of the cities, regions or States. The correlations between collective intelligence - on the one hand - and economic prosperity and public health - on the other hand - will be particularly highlighted by the software to be *the most useful to the persons in charge of public policies*.

The fourth possible use of the software is that of a learning game for the new generation of 21st century leaders, managers and designers who need to take into account the full complexity of human cultural processes.

C) Principles of cartography of collective Intelligence

In addition to the improvement of the theoretical model and to the software that represents it, the research will relate to…

1) the development of indicators and methods of measurement to make the translation between observable phenomena and available data - on the one hand - and variables of the model - on the other hand.
2) Moreover, the research will develop a method of *location, indexing and representation of ideas and knowledge*. We already have the basis of this method, which rests in particular on an special dynamic ideography. This ideography is built in a combinatory way, starting from the three semiotic invariants of the signification: signifier, signified and referent. (See power-point documents:

Powerpoint file 2
Powerpoint file 3
Powerpoint file 4
Powerpoint file 5

3) Finally, the research will relate to the *cognitive ergonomics* of the *visual representations* of collective intelligence. The goal here is to return the more "readable" as possible the *images* produced by the software based on the numerical data (data which, obviously, will be still consultable).

II) Empirical Research (2003 - 2007)

To test our model and determine the most effective ways of improving collective intelligence by using cyberspace, we will carry out a coordinated empirical research

plan to a international scale. Four key-grounds of the human development in the society of the knowledge have been choosen. They are about:

> **1) collaboration by Internet in scientific research (Canada, Switzerland),**
> **2) online co-operative trainings (the USA, Brazil, French-speaking Africa),**
> **3) information in health using the network (the USA, Latin America),**
> **4) electronic administration and local "cyber democracy" (Canada, Brazil, France).**

Our network of researchers is composed of people who have a scientific and technical activity of long date on these topics and the principal researcher published on the subject a dozen of books translated in more than ten languages.
During the four years which the research will last, about fifteen doctorate students will actively be trained with the theory, the methods and the practice of the new field of research. We will organize several conferences and will create a scientific newspaper online and on paper: the Journal of *Collective Intelligence*, which is already supported by several academics of reputation. We also will animate from the Web site of CRC-CI an international network of collective intelligence practicing the sharing of experiences and knowledge. This virtual community, which will use the best instruments of knowledge management, will imply consultants, companies, representatives of public administrations, actors of online education, public health, etc.

Our research network is firmly commited into the growth of a scientific field which will appear increasingly crucial as the new economy and the knowledge society will progress. Humanity passed a significant threshold while taming and selecting deliberately animal and vegetal species (breeding, agriculture). It reached higher stages by controlling new forms of energy (industrial revolutions). It is today confronted with the challenge of the mindful management and evolution of knowledge, and that at a pace and scale unknown in its preceding history. The science of collective intelligence wants to go along with this new phase of the human adventure.

::CrossReference

last 5 articles posted by Lévy

:: **Research Statement** - Apr 1 2003

:: **Bibliography** - Apr 1 2003

:: **The Collective Intelligence Game** - Mar 26 2003