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Cyberpsychology

Jose M. Prieto and Pedro Sanz
 Complutense University, Madrid
 Dpt. Individual Differences and Work Psychology
 Campus Somosaguas, 28223 Madrid
jmprieto@psi.ucm.es
pedrosanz@correo.cop.es

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Glossary

Artificial Intelligence: A sub-discipline devoted to making machines do tasks that would require intelligence if done by humans. The aim is creating computer-based robots competent enough and ready to reproduce a broad range of human behaviors, ranging from sensing to reasoning, from recognition to problem solving.

Cybernetics: A discipline devoted to the study of information processing and communication systems as well as the functioning of control systems when applied to machines, animals, and organizations.

Cyberpsychology: New realm of psychological research and action that uses cyberspace as an instrumental means towards an end, that analyzes and identifies the underlying dimensions that structure and make sense in cyberspace, that studies the cognitive and social processes that facilitate or impede the evolution of cyberspace, that discloses pragmatically designed principles leading to success in cyberspace, that pays attention to personality disorders or social conflict arising in cyberspace, that introduces quality filters for searching and evaluating Internet resources.

Cyberpunk: A person who knows how to use the computers as a means of self-expression, as a tool for producing virtual worlds where reality and fantasy are intertwined and where the individual person becomes a character in a scenario.

Cyberspace: Imaginary space where the number of dimensions is four or more, where absorbing sensory experiences take place, where intellectual creations may be achieved and enjoyed, where people share cognitive and emotional cues virtually. It is also an economic survival kit for the information society.

Digital game-based learning: Fusion of computer games and video games that situates learning into a simulation context in which the game-player is an actor exploiting the interactive possibilities, the climate of incertitude and the curiosity appeal of a given game to attain learning goals.

E-learning: The use of internet and digital TV technologies to make available a broad array of information and databases that must be transformed in the learning process to produce sound and reliable knowledge and to facilitate human performance in real-life settings.

HTML: Hypertext Markup Language. A comprehensive set of codes periodically expanded that may be considered both an authoring language and a distribution system for producing and exchanging electronic documents that integrate text, pictures, sounds, and animations plus hypertext links among documents or among sections of the same document. The direct consequence of its existence was the materialization of the World Wide Web.

Knowledge Management: Theoretical and operational frame of reference to deal with challenges and dilemmas present when capturing, creating, codifying, distributing and sharing knowledge among networked users. Sometimes it is a substitute for the concept of “learning” and its logical extensions within the Psychology of Adult Learning or Human Resources Training and Development Programs.

SGML: Standard Generalized Markup Language. It is a comprehensive set of codes that facilitates the editing and formatting of texts as well as the retrieval of documents shared by persons working in different computers and in different platforms.

Tags: Codes inserted in texts or data structure used to specify how the computer and the software must interpret the instructions.

Telematics: It is an English transposition of a French expression “telematique” derived from a larger expression “teleinformatique” that may be translated as “networked computers” or “wired computers”.

Virtual Reality: The computerized simulation of an entire three-dimensional surrounding where the person is invited to perform actions or manipulate objects by clicking on the mouse. Visually the degree of realism is very high but kinetically leaves a lot to be desired.

Summary:

This contribution has been divided into five sections. The first analyzes the emergence of

cyberspace as a counter culture emphasizing distinctive backgrounds such as fictional universe, built-up intelligentsia, networked scenarios and economic survival kit. The second analyzes the emergence of cyberspace within the contexts of military and political interests in the US and the EU. The third analyzes the transition from the Gutenberg to the Cyberia culture by remarking on twelve opposing pairs. The fourth analyzes the concept of Cyberpsychology by paying attention to six different notions in the background: instrumental, dimensional, process-based, pragmatic, psychopathology-biased and knowledgeable. The fifth introduces an operational framework of Cyberpsychology as continuing education, as doing research and as knowledge-based expertise once the psychologists become functionally literate in NICT.

Cyberpsychology

The word **logos** has been a password traditionally used to gain admission to recondite shrines of advanced knowledge in the Western European culture. The variety of professional groups making use of the word “logos” as a distinguishing mark is large enough to emphasize that they selectively exploit expert knowledge to deal with scientific and technological problems or challenges. The following disciplines are just examples: ecology, lexicology, musicology, neurology, pharmacology, psychology, sociology, toxicology and so on. By the last decade of the 20th century the ending “logos” became an unimaginative final part to name any brand new denomination. A fashionable expression has been fostered, **‘knowledge management’** as a distinctive alternative to the recurrent use of logos. Both allude to correct reasoning, to valid argumentation, to sound judgment, to true propositions, to reliable discourses. In the past, for “logos”, the background has been the cosmos, the spiritual principle or a sophisticated way of identifying God; at the beginning of the 21st century, for “knowledge management” the background is organization, continuous learning, and the Internet. “Logos” and “Knowledge Management” are two sides of the same coin or two parallel metaphors.

The emergence of concepts such as **‘cyberpsychology’** and **‘knowledge management’** took place in the same decade, the 1990s, and has provoked quite similar reactions of acceptance or rejection among scholars and students of psychology. For many, both are just “in vogue expressions”; for some, both point to a postmodern worldview that has already started to change the way psychological research is carried out as well as what might be considered “normal” or “abnormal” in the behavior and performance of individuals and groups. For instance, should a group of computer illiterate subjects be considered an appropriate sample for the study of normal or abnormal daily-life functioning? Just another example, virtual reality programs allow rotations of 360 degrees from the eyes of the viewer, up and down or front and back directions at will. Should this kind of perceptual whirling be considered natural or anomalous? This is a question that cannot be set aside by psychological researchers considering the fact that many people born after 1970 were rocked in the arms of their parents or got off to sleep while watching the TV cartoons and videoclips rich in special effects. In other words, must the multimedia and the Internet be regarded as a tool or a new surrounding? Some people weigh and consider cyberspace as the seventh continent still not fully discovered.

It is convenient to clarify first what is meant by Cyberspace as a prolegomenon to the

notion of Cyberpsychology. Apparently this is a new term, but in fact this is a term that has been used increasingly during the 1990s among those scholars and practitioners who are becoming stable dwellers in cyberspace.

1. Cyber-culture

Nobert Wiener (1894-1964) coined the term "*cybernetics*" in 1948, as a title for his book. The original meaning in old Greek, "**kybernetikos**" means "steersman" or "helmsman". That is, the person who steers a machine, the pilot who steers a ship, a job that requires independence and individual self-reliance. Soon after World War II, "cybernetics" became a widely accepted label for a discipline devoted to studying the processing of information and communication systems as well as the functioning of control systems when applied to machines, animals, and organizations. Initially it was a technological discipline because it was rooted in system-engineering techniques but later entered the borders of science when applied successfully to the analysis and understanding of certain neurological problems. The focal point in this discipline is studying the flow of information within a system, and so keeping some distance from other disciplines revolving around the study of energy or materials and its derivatives. The exchange rate is the use of feedback to get the intended impact on goal-directed activities cropping up in technological artifacts as well as living organisms. For decades the prodigal son of this discipline has been artificial intelligence (AI), an insatiable consumer of public and private funding, because it is committed to take as a model the complex functioning of the human brain when involved in problem analysis and problem solving strategies. Some outcomes have been huge and impressive such as teaching machines to solve problems or to behave as an artificial limb.

In Europe another term was coined during the 1980s, "*Telematics*", to identify a sub-discipline examining and making the most of information sciences and technologies based on the long-distance transmission of digital information. In Euro-English telematics is a short name for "tele-informatics" that may be derived, at will, for instance, from the French word "**informatique**", the Russian "**informatika**" or the Spanish "**informática**", which is used to identify the processing of digital data for storage and retrieval. By the beginning of the 21st century the expression **telematic space** is used to fence in that territory where people wander around when they are connected online. There is, thus, an overlap with the term "*Cyberspace*" that will be commented on later.

Alvin Toffler coined the term "**cyborgs**" in 1970, in his book *Future Shock*, where he devoted several pages to analyzing the possibilities of human-machine integration and the interaction of human brains and databases through networked communication. A **cyborg** is a person whose physiological functioning is aided by mechanical or electronic devices built into the body to extend beyond normal some abilities or to compensate for some disabilities. Psychological expertise is often demanded in the design process to optimise the levels of performance or to smooth the training process for the cyborgs. Often support from health psychologists is requested after the surgical implant of devices to facilitate the psychological adjustment of the cyborgs and relatives. Also a related concept "**cyborg consciousness**" starts to elbow its way through the human experience of being "a sentient high-tech interface" between an organism and a mechanism. In more conventional terms associated with cross-cultural psychology, it is an advanced modality of "mestiza consciousness". In movies such as "Star Trek", "Star Wars", "Robocop", "Terminator" and "Artificial Intelligence" the scriptwriters introduced good examples of cyborg heroes that cannot find their character because they know

that they go halves in a “mechanic” and an “organic” identity. In the dialogues they speak as “hardwired subjectivities” evidencing symptoms of double self and fuzzy “cyborg consciousness”.

During the 1980s fine artists and graphic designers crossed the line of gender representations of cyborgs and pushed their art into the awareness of the sexual impact of cyberbodies. Female and androgenous cyborgs started to look sexy, often undressed, exposing to view sexual poses. Cyberbodies made of metal and ceramics became the subject of posters spread out and unveiling cyborgs with naked breasts or almost revealed, sensuous facial features, enhanced contours of her sex, sculpted feet in high-heeled shoes, and phallic symbols somewhere around. It turned out that cyborgs could be created for pleasure.

The term "**Cyberpunk**" started to be used as an argot among computer literate writers in counter cultural circles in the mid 1970s as witnessed by John Brunner, in his novel '**Shockwave Rider**' published in 1975, and by William Gibson in several science fiction stories issued first in magazines and afterwards collected in 1984 in a book, '**Neuromancer**'. These persons started to call themselves '**cyberpunks**', stressing that they used computers and video games as a way of self-expression, personal pleasure, net profit, sense of duty. In fact they ascribed the role of main or secondary characters to “first generation cyborgs” in stories where the narrative occurred in post-industrial and information-governed settings. They set up the basic cyberpunk code, “think for yourself, question authority”, bringing to the fore an anarchist cultural background melting away into a high-tech mood and open-minded attitude. In this genre of literature **cyberpunks** are often depicted as skilful persons who know how to take advantage of the new information and communication technologies (NICT) to attain intended and often malevolent goals. The distinguished marks of insurgent characters were also enacted among cyber-persons.

These fiction writers also realized that they had developed a set of beliefs about the existence of some kind of actual space behind the screen, “a place that you cannot see but you know is there”. This world of lucid dreaming beyond a television or a computer screen started to be named **Cyberspace**.

Initially the brand new root "**cyber**" started to suggest the idea of computer memory and networked communication systems. Later it was used as a short name for computers and for networked computers. "**Space**" alluded to a multidimensional but virtual space. Together, both combining forms molded into the term "cyberspace", sowing the seeds of different meanings and nuances.

- Cyberspace as an imaginary and fictional universe where sensory experiences take place and in which the mind is absorbed and the person experiences oneness with the set of stimuli, challenges and performance elicited. It generates a trancelike experience, actual and genuine. "Consensual hallucination" was the assertion coined by cyberpunk writers.
- Cyberspace as built-up intelligentsia where the individuals are welcome if they know how to stroll along boundless passageways getting in and out of intellectual creations of a very large nature made available online. It is a conceptual realm where words, human relationships, data, links, meeting rooms are at the disposal of a highly discriminatory club of people using computer-mediate communication channels. It is a “World III” structure in the terminology launched by Sir Karl Popper (1902-1994).
- Cyberspace as a networked scenario in which people share cognitive and emotional cues when they communicate and interact, when they exchange images and voices, when they bring forth a large variety of sensory experiences. They stay connected through a physical network but do have access to uncharted regions without sharing

the same time and space. The online behavior of individuals becomes a part of Internet psychological environment.

- Cyberspace as an economic survival kit for people determined to maintain rather eremitic but productive life-standards, somewhere in the countryside, far from any large or medium sized cities and neighborhoods. It is a gateless gate for those who want to stay outside but, from time to time, need to emerge ephemerally by clicking on a mouse. It is a survival kit based on telework and telebusiness. It is irrelevant to know if the employee stays in the office, in a prison, in a monastery, at home.

Figure 6.27.7.7.1: Cyberspace: the seventh continent

Distinctive backgrounds

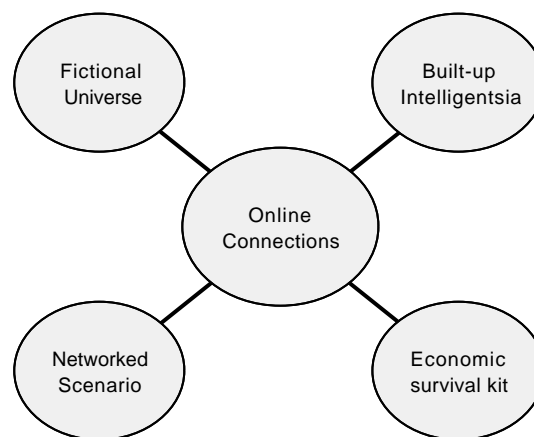


Figure 6.27.7.7.1 identifies the distinctive backgrounds of this seventh continent inhabited by people evidencing a virtual state of mind who use networked computers in the process of creating an unacknowledged society and a culture where tones of bits of information are ready-made by-products or services. Furthermore, cyberspace is an unimaginary site and has a universal time system, without time zones or geographical borders. The unit is called the beat. The 24 hours of a day have been divided by 1,000 beats, each beat being equivalent to 1 minute and 26.4 seconds. 12:00 noon is equivalent of @500. The meridian time coincides with the European wintertime. This system has been proposed by SWATCH (<http://www.swatch.com>)

and was inaugurated on October 23rd, 1998. This system is now in the dissemination process, using special converters that may be downloaded to computers or with watches using both systems. The great advantage is that all the digital watches mark the same time all over the world, be it night or day. It has certain advantage in the process of classifying hyperdocuments in cyberspace.

2. The emergence of the seventh continent

It is very convenient to highlight several landmarks in the emergence of this seventh continent, known as cyberspace, the virtual surrounding where cyberpsychology as a sub-discipline has grown.

- Platforms known as computers and Internet are a by-product of espionage and counter-espionage during the World War II and the Cold War as well as of knowledge management and exchange programs between military intelligence and think tanks on university campuses or ahead of times research laboratories. The framework was confidentiality and strategic advantage to inflict a defeat on the rival. The consequence was reducing to a minimum the degree of compatibility in the hardware and software invented and refined. It was the point of departure of NICT.
- In the late 1960s the need for a generic coding system and of a comprehensive catalog of tags to facilitate the editorial structure of documents started to be discussed in Canada and in the US. In 1969 the first draft of a “Generalized Markup Language (GML)” was launched: it allowed the editing and formatting of texts as well as the retrieval of documents shared by persons working in different computers and in different platforms. In 1986 the final version (renamed Standard and Generalized Markup Language (SGML) was tested at the European Particle Physics Laboratory in Switzerland, was approved and published on October 15th, 1986 as ISO 8879:1986. The SGML is the pivotal framework clearing the way for the exchange of digital documents among users operating in cyberspace.
- The Hypertext Markup Language (HTML) is the first well-known scion of the SGML. It was released as an authoring language and distribution system for producing and exchanging electronic documents integrating text, pictures, sounds, and animations plus hypertext links among documents or among sections of the same document. The direct consequence was the materialization of the World Wide Web in 1990.

It is convenient to make the contrast between the access and use of Internet before and after the creation of the HTML standard. Before 1992 online users were a tiny minority in American, Canadian and European universities under the umbrella of NATO. Commands, instructions and addresses were copied in notebooks managed by scholars somehow literate in programming languages and information technologies. Once the hypertext approach was developed first in Geneva and later in Champaign, a user-friendly browser, Mosaic made available in 1993, opened the way to computer literate but also to computer illiterate scholars ready to move around cyberspace by clicking on a hypertext link.

- Another important landmark was the period 1992-1996. Jacques Delors, as President

of the EU Council, and Al Gore, as Vicepresident of the US, converged and encouraged the visualization of New Information Highways as the essential infrastructure setting the pace for the advancement of science, technology and quality of life during the 21st century. Both contributed to bury the "*Stars War*" military plan of actions sponsored by Ronald Regan and Georges Bush during the 1980s and early 1990s. The leading role of both leaders influenced the assignment of funding to new information technologies programs, to the consolidation of cyberspace as a common and fertile land, to the expansion of Internet throughout university campuses in the US and the EU. Public and private funding and investment in computer rooms, in programming languages, in innovative approaches generating learning and knowledge-based infrastructures increased exponentially as a direct consequence of policies backed at the top of the respective governmental pyramids. Al Gore was defeated in the 2000 elections and the first decision of George W. Bush Jr. was to re-launch the "Star Wars" project. Once again candidates backing learning and cultural programs come off second-best after those favoring military programs.

- The commercialization of Windows 95 marks another no-return event and the direct consequence was that many users started to have access to a large variety of protocols and programs integrated under the umbrella of a single operating environment. In the past the integration of programs and standards turned into a contest between manuals, hardware and software plus 'aha' exclamations. About 3 out of 4 breakdowns in Internet connections take place in desktop PC running under Windows 3.1.
- Two students at Stanford University created in 1994 a database with all the Internet addresses they considered of real interest for the life on the campus and the challenge of updating the database led to the invention of search engines, the first one Yahoo.
- In Spain there was another landmark. In 1996 the Spanish Psychological Association (Colegio Oficial de Psicólogos) started to provide gratis access to Internet and free homepages to every associate as a service included in the membership fee. The aim of this initiative was to reduce the differential ratios of accessibility to Internet between Spanish psychologists who were scholars and practitioners. Other professional associations in Spain backed this same initiative, and together created a Foundation focused on supplying free connectivity to individual members. It was not the case in the rest of the world and so access to Internet passes through many intermediaries. In 1996 the estimate of Internet users in Spain was 200,000 and about 15-20% of them were practitioners with an Internet account facilitated by the above-mentioned Foundation.

3. Dipoles in cyberspace

In Physics the term dipole identifies a system based on two equal and opposite charges separated by a distance; a good example is a magnet. Cyberspace may be grasped also as a magnetic area powered by dipoles. This metaphor is very convenient because it allows an understanding of reality based not on inelastic dichotomies (black and white, for instance) but on elastic polarities (black and white are special and limited cases of gray relationships). The underlying assumption is that in any given life-space the large majority of things are matters of degree, of multivalence, of fuzziness. For instance, a three-valued fuzziness corresponds to true, false and equivocal. It entails a selective advantage to analyze events or circumstances by

drawing attention to apparent paradoxes and by preserving position-momentum uncertainty.

In operational terms, the transition towards the NICT and cyberspace culture may be examined as typical examples of extremes outlooks pointed up in Table 6.27.7.7.1. The left column lists current preferences that are in tune with the Gutenberg culture whereas the right column lists preferences associated with the Cyberia culture. Here are some comments that underscore each opposing pair in each row of the table.

- A backward look identifies the mentality of people paying attention to precedents in information management and who endorse unadventurous ways of handling documents, databases, archives, and transactions. It argues for a retrogressive perspective, very common, for instance, in academic milieus where a sense of erudition prevails. It is the preference for treading on classic grounds as is the case, for instance, in the introductory section of a good paper: a few paragraphs devoted to discussing the literature and making clear a logical continuity between previous and present work. It often advocates a deterministic view on present affairs. By contrast a forward-looking mentality endorses a pioneering attitude towards advances in information management and up-to-date ways of storing and retrieving documents, databases, archives, and transactions to achieve major aims. It discloses a mindset committed to pushing NICT to the limits and beyond. It reflects a progressive and enterprising frame of reference as happens in the discussion section of a paper where the author suggest predictions and applications warranted on the basis of research findings. When dealing with information processing systems both mentalities are present and play an important function. For instance, it means a narrow versus an open-minded attitude towards troubles and complications brought about by hardware and software shortcomings. It is a matter of accepting or rejecting frequent upgrades, of moving from electromechanical to electronic and digital equipments or gadgets. It is a gateless gate. There is not a physical but a psychological barrier preventing access or customary usage.
- The large majority of people still use pens or pencils as the basic information technology when they write notes, outline schemes and ideas, or draft a letter saying hello on a birthday. By contrast there is an increasing number of people accustomed to using keyboards, chips and mouse as the main desktop technology. They use e-mail, for instance, for exchanging views and comments, for drafting letters and documents, for saying hello on a birthday resorting to a virtual postcard. Both standards are compatible, but predilections unveil a bias.
- Personal computers proliferate in the workplace and also at home and people are regular users of one or a few programs, considered adequate tools to perform a given task. That is a working technology. Many of them know just the basics of such programs and they view themselves as dummies when dealing with computer-based information systems. They consider themselves only “PC users” and look for the assistance of a system administrator as soon as something goes wrong. By contrast there is a growing minority, often males and members of a given cohort below the thirties or twenties, who make use of computers as an entertainment technology. They spend a lot of time playing three dimensionally on a computer, participating in dynamic and highly demanding games based on virtual reality and multimedia effects. They do not mind if something goes wrong and the PC crashes or a virus produces detrimental effects. They know how to survive by fixing and repairing the

damage. Recently computer games and video games have fused and led to a new by-product that can be reached online via broadband. The digital game-based learning, situates learning in a simulation context and exploits the interactive possibilities, the climate of uncertainty and the curiosity appeal of games as means to attain the intended learning goals.

- Notebooks, calendars and diaries are still the standard as far as information and time management systems are concerned for many people who write notes or keep daily records of appointments, events and experiences. Handheld computers, personal digital assistants, smart cards and pocket PCs are sophisticated tools designed to create and go along with contacts, tasks, calendars, memos, note taking and email anywhere. They may be synchronized with the desktop PC at the touch of a button and so they serve structured functions such as transaction processing systems, management information systems, and decision support systems. The consequence is that these tools require a systemic perspective in the user's mind that washes away the particular focus on daily life affairs planning cultivated by the adherents of the amanuensis tradition.
- The overlap between computers and communication technologies has changed the standards in telecommunication channels. It is not only a matter of innovation in the types of signals (analog or digital) or the transmission medium (twisted wire, coaxial cable, fiber optics or wireless transmission) used by the so-called conventional telephone system. It is a new concept, information superhighway, conceived as a high-speed telecommunications network that captures, collects, exchanges or distributes information by setting aside until now unbreakable barriers such as time and space. For instance, the short message system incorporated into first and second-generation cell phones has amended not only communication patterns among teenagers but also between parents and children, enlarging the generational gap. Third generation cell phones add graphic images and live video and so teleconferencing, data conferencing and videoconferencing will allow people to meet electronically modifying the conventional idea of what is meant by telecommunicating.
- In many countries many students still cannot consider the possibility of organizing exams without making use of photocopies. This is a kind of addiction to stockpiling photocopies of handouts made available in class. However the scanners transform the contents of a printed page to a digital image that may be accessed and manipulated as a graphic file in a computer, and so in cyberspace. Also professors may electronically produce handouts of lectures and make them available online. Scanners are low-priced compared to photocopying machines and diskettes (where the files may be copied) and are also cheaper than a ream of photocopies. It means an important metamorphosis in information management strategies available in the classrooms and, as a consequence, the cognitive and manipulative skills employed by students when studying and producing knowledge by themselves.
- Printed books and journals are still the conventional medium for distributing and sharing information and knowledge within the scientific, the technological, and the literary community. Electronic books and journals ready to be read and examined on flat screens, in Ebook readers, in Pocket PC and so on are the new standard. New ways of reading and studying textbooks, for instance, are at one's fingertips. It is possible to highlight text and bookmark pages, to select the right background color

for those who suffer color blindness. There are also features such as the FIND function that scans a given text for a particular word or the NOTE function that allows the attachment of comments in a particular section. At least one dictionary comes preloaded and additional dictionaries may be loaded and so it is possible to look up unfamiliar words as the person reads. These functions are examples of further developments in the conception of what reading electronic documents online and offline entails.

- Paragraphs are a set of sentences that hold up an argument by expanding, for instance, a core idea. Paragraphs serve as the basic structure of any written text providing a distinctive identity as compared to speeches where the articulation of sounds and the variety of vocal inflections are the distinguishing marks. Paragraphs and graphic illustrations have worked together in combination, for centuries, improving the degree of effectivity and reliability in the communication process between author and reader. Initially multimedia devices were designed as an extension to written documents by allowing the provision of cross-referenced text, audio, image and video materials. The emergence of a new communication medium was the immediate consequence as soon as navigation and browsing expertise turned out to be a requisite in working through the hypertext. The latest is that paragraphs play a secondary or tertiary role in multimedia documents, almost always at a deeper level for those looking for an erudite approach. Images and animations stand out in the foreground of multimedia documents resorting to very short sentences or precisely a single word as guiding scripts for the reader. There are at present two very different types of authors and readers. The traditional type still produces manuscripts that display arguments through paragraphs and descriptions. The advanced type prefers the display of multimedia documents where descriptions have been substituted by videoclips and paragraphs by interconnecting links disclosing an argument interweaved by the reader, and not by the author. In a multimedia document spatial orientation and the management of time seem to be the critical factors leading to success or failure.
- The purpose of an illustration is to assist the reader in the process of grasping the facts, concepts, processes, principles and procedures introduced in a document. The art of illuminations can be traced back to the Middle Ages and with the invention of the printed book became illustrations: both have been used to convey contents that words alone cannot really make clear. Diagrams, drawings, flowcharts, graphs, maps, organization charts, photographs, and tables are the most common varieties. The videoclip is an advanced illustration technique that requires the fusion of animation and synthetic thinking. It belongs to the audiovisual culture of TV reportages invented by screenwriters compelled to summarize in a few images and phrases what more conventional writers would chronicle in several pages or scenarios. There is a generational gap regarding the acceptance or rejection of videoclips as opinion makers. Conventional readers make decisions after considering half-title pages or book covers. Postmodern viewers make purchase decisions after considering a videoclip of the movie, the compact disc or the book. A good and dynamic summary is an invitation to buy what has been outlined briefly in the storyboard. A videoclip turns out to be a piece of conviction about the quality of the product under scrutiny.
- People fond of gazing at works of art, historical objects, antiquities, relics, and treasures are regular visitors, for instance, of a Fine Art Museum where these kinds of masterpieces are exhibited. This is a habit many of them assimilated at school.

However a new variety comes to light, the Virtual Museum, where many objects may be watched or enjoyed by having indirect access through the screen. Virtual objects are present but cannot be touched or smelt in the way a more conventional object may be experienced. A Virtual Museum often exhibits the finest work of creators who use bytes of information to produce, for instance, three-dimensional environments where visitors may interact with dots and images viewed or simulated in space. For a minority these are masterworks of an ephemeral nature but reliable and omnipresent at will. There are no further copies at all; each instance may be catalogued as a prototype placed on digital scenery.

- Learning aids have been a conventional tool for any person involved in study programs. The information is organized in an orderly and linear way so that the student must follow the track to reach the right section in the crib. By contrast learning wizards based on the hypertext technology are available on demand by clicking on the screen in a non-linear manner. Many computer users do not feel confident when seeking advice from the hypertext help system located at one's fingertips at the top right-hand side of the monitor. They do not know how to pose the right question, how to formulate a doubt, an inquiry that may be answered in an aseptic manner by the same software where the person feels lost or out of control. An adequate training to use hypertext devices is a prerequisite that only a tiny minority master.
- The contrast between national languages and Cyber-English is the source of permanent conflicts in NICT. It is the realm of nationalism confronted with cosmopolitanism. In many countries national languages (including English) are protected and enhance the social identity of citizens if a romantic view on nationalism has been backed by political and corporate discourses as a quasi-religious credo. In Internet there emerges a new "lingua franca" known in many surroundings as Cyber-English, which has rather few elements in common with English language. The grammar and entries in Cyber-English dictionaries change as fluently as eloquently. Such a metalanguage often oversimplifies the communication process and sometimes passes on unleashed interpretations. In several countries, like Spain, there is a climate of rejection against this Cyber-English considered a new form of colonialism when in fact it is the official language in information societies moving ahead of regional languages maturing during the 19th century. Regional languages come to be protected species since Cyber-English is the metalanguage of the 21st century created and reformulated at will by Ciberia citizens, a commonwealth that does not maintain diplomatic relations with offline countries.

Table 6.27.7.7.1: The transition from Gutenberg to Cyberia	
Gutenberg	Cyberia
A backward look	Forward-looking
Pens and pencils	Keyboards, touch screen and mouse
PC users	PC Players
Notebook, calendars and diaries	Personal digital assistants and pocket PC
Telephone	Cell phones: WAP and UMTS
Photocopy	Scanners & bulletin boards

Printed books	E-Book readers
Text	Multimedia
Graphic illustrations	Videoclips
Fine Art Museum	Virtual Museum
Learning Aids	Learning Wizards
National languages	Cyber-English as meta- language

Each row of this table has been commented on horizontally and a vertical reading is also welcome. It may come to be a performance test about the degree of competence of the readers in Gutenberg or Ciberia affairs. It is a matter of adding yes or no, separately, in each column. A biased profile is desirable since it reflects a preference towards a specific cultural background to survive the information age. Also the vertical reading of this table raises a different question: how many technological changes may current members of a given senior cohort stand. The answer seems to be that above three technological revolutions in cyberspace the large majority of senior users start to view themselves as unfashionable, behind the times, anachronistic. Always the younger cohort seems to be ready to take on board every new technological gadget.

4. Cyberpsychology: a fuzzy domain

The term *Cyberpsychology* started to circulate as a promissory note in cyberspace by the academic year 1995-96 in different webpages.

- Prof. Leon James, at the University of Hawaii, wrote a pioneering paper on *Cyberpsychology: Principles of Creating Virtual Presence* made available online at <http://www.soc.hawaii.edu/leonj/leonj/leonpsy/cyber.html> where some post-modern and fresh subjects are introduced in the analysis. The overlap between cyberspace and the mind is asserted following a classical train of thoughts in cognitive psychology. Computers are appraised as “convenient and powerful extensions of the human mind” and the consequence is that “every characteristic of the mind can be expected to show up as a property of the cyberspace”. The emergence of a communal mind in Internet is rooted in “the density of interaction in any topical zone and the type of ongoing activity”. The omnipresence of such a communal mind is emphasized as a consequence of the fact that “topics and activities in cyberspace create their own virtual zones that become accessible to others across time and space”. The ineffable continuity of such a communal mind is warranted because “using and participating are the mechanisms by which virtual reality grows and evolves”. A statement such as the “cyberspace is in effect the communal mind” leads to Jungian connotations by suggesting that cyberspace exists and grows as a self-ruling collective unconscious. The basic argument justifies the springing up of a new denomination such as cyberpsychology that grows roots into this certitude: “ciberspace, like mind, is not in physical space, but in virtual space, without extension,

distance, or mass". So the core subject of cyberpsychology seems to stem from the proactive and interactive mind embedded in cyberspace.

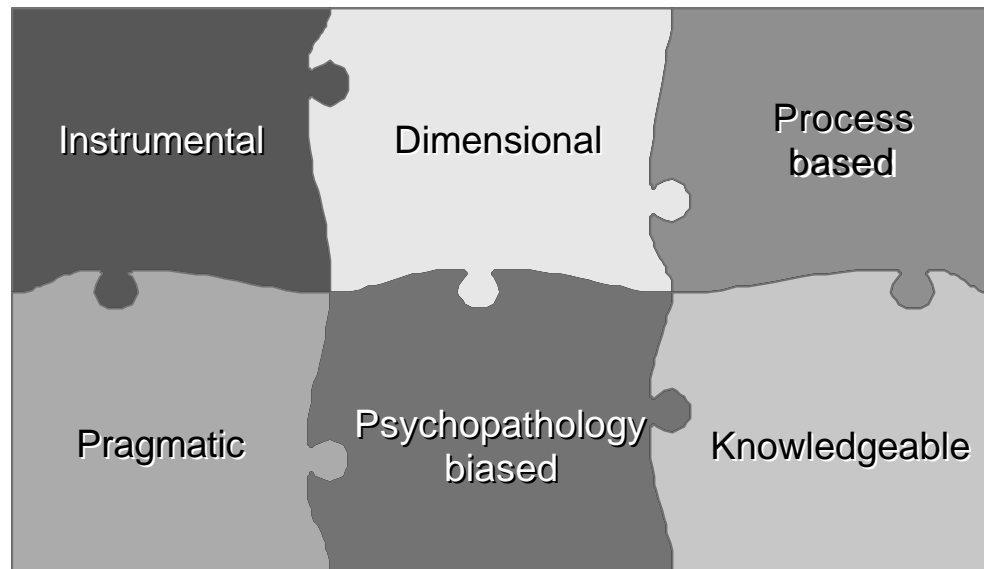
- Prof. John Suler, at the Rider University, started to write in 1996 an electronic book on *The Psychology of Cyberspace* that is available online, as a project in a course of continuous expansion, at <http://www.rider.edu/users/suler/psycyber/psycyber.html>. The point of departure has been an intensive case study carried out on the psychological and social interactions held by members of a very vivid and evolving community who used to meet in a notorious virtual space known as "The Palace" (<http://www.thepalace.com/>), already closed and dismantled. In the 1995-1996 it was a highly visual, auditory and chat environment where visitors adopted and played a large variety of characters by resorting to a graphical representation of themselves, that is, a self-portrait, known as avatars. Each person selected and disguised at will his or her avatar and used it to move from a room to another room in the palace and to interact with other visitors. It was the realm of pure fantasy and fiction per antonomasia in cyberspace. Prof. Suler brought into play the participant observation technique to study cyberspace as "a psychological space" and as "a dream world". The psychoanalytic as well as field theory perspectives shaped the theoretical and operational background making sense of what emerged in this research project. Internet users felt themselves at comfort because somehow cyberspace was "an extension of their mind and personality - a "space" that reflects their tastes, attitudes, and interests". Following a psychoanalytical vein cyberspace is interpreted as a "transitional space" between the self and the other. This frank testimony, "everywhere I go on the internet, I keep running into..... ME!", fixed the compelling and subjective axis for the psychological scrutiny. This perspective goes a little bit further by disclosing the parallelism between dreaming and wandering around in cyberspace. "In dreams, the conventional rules of space do not apply...The only sense of "distance" or "place" that has meaning is psychological... Also, the restrictions of gravity disappear... So, too, in cyberspace the user can transcend the laws of space and physics. One simply has to click on a button to be transported from one location to another." Another parallelism emerged in this study, that between cyberspace and the experience of "being time" (Cfr. 6.27.7) of any human being. "In the unconscious, time is irrelevant... In cyberspace, one's time frame can be suspended, blended with other people's time frames, and, sometimes, even negated".
- Prof. Steven Kronkheim, at the University College at the Maryland University, has been more concerned with the use of cyberspace as a virtual classroom where professors and students interact in the process of generating learning experiences. His R&D programs (summarized at <http://www.ucm.es/info/Psyap/enop/symposia/kronheim/>) have recoured to an understanding of cyberpsychology rooted in behavioural and cognitive approaches to analyse and improve communication and interaction patterns held in distance delivery courses taking place wholly online. In 1996 he convened the first symposium on Cyberpsychology at the annual convention of the Eastern Psychological Association held in Washington.
- Prof. José M. Prieto, at the University of Madrid, also started to work in cyberspace as an scenario where psychological teaching, learning and research programs may take place and where an ability such as spatial orientation and a skill such as the management of time play a very significant role in online performance. The initial focus was on

Psychology and Telematics (<http://www.ucm.es/info/Psyap/libros/psitel.htm>) and the next step was the interface between literacy in NICT and the involvement of Work and Organizational Psychologists in Knowledge Management programs (<http://www.ucm.es/info/Psyap/libros/telema.html>) insofar as the area of Human Resources is concerned. In 1997 he convened the first symposium on Cyberpsychology held during the 5th European Congress of Psychology held in Dublin. Under his supervision the proceedings of the 23rd International Congress of Applied Psychology, held in 1994 in Madrid, (<http://www.iaapsy.org/>) were made available online in HTML one month in advance of the opening ceremony. It was also a pioneering activity for the records of Cyberpsychology.

- A peer-reviewed journal, entitled "*Cyberpsychology and Behavior*" was launched in 1998 (<http://www.liebertpub.com/>) and made public during the 24th International Congress of Applied Psychology and the 106th Annual APA Convention both held in San Francisco, August 1998. In the year 2000 the electronic and the printed version are accessible at the same time and the subscribers have access to each issue online by using a password.

A lustrum has elapsed since the concept of Cyberpsychology was coined and started to be used here and there in homepages, symposia, and journals. By July 2001, Cyberpsychology is an expression showing a marked visibility in Internet. The number of hyperdocuments including this term ranged between 1,695 and 3,100 in a comparison made through outcomes produced by several search engines. It is a term used and rarely defined. It is possible, however, to trace a cognitive map of the meaning and tenors that seem to come out ahead. Figure 6.27.7.2. illustrates the puzzle of the six different meanings that configure present trends in the groundwork of the notion of cyberpsychology.

Figure 6.27.7.2:

Notions underpinning Cyberpsychology

The first meaning has to do with the use of online computer-based resources and support facilities as a tool for conducting a large number of activities that psychologists carry out on the campus or in daily practice. It is an **instrumental** notion of cyberpsychology, stressing the means to and end nexus. Cyberspace is not valued and important in itself; it seems to be very useful in achieving certain “ad hoc” aims, rooted in psychological action and effective performance. As a consequence, students and graduates in psychology should learn to handle those tools that might be relevant for the attainment of certain purposes whereas high levels of expertise in the management of NICT are not a compulsory requisite. So conventional courses on Internet and Multimedia may be renamed for domestic consumption purposes. It will be the output of a segmented strategy of marketing.

The second meaning deals with the psychological dimensions of computer-based settings, of online environments, of personal and professional grounds of performance opened by computer networks. It is the realm of the psychological analysis of abilities, skills, interests, knowledge, tasks, cyberspace contexts, cyberspace values, and activities examined by psychological researchers to tease out factors or clusters underlying effective or ineffective performance patterns. These are the kind of studies that personnel psychologists complete to identify multifaceted features such as experience requirements, cyber-users characteristics, cyber-users’ requirements, cyberspace characteristic components, cyberspace requirements, communalities and specificities among communities in cyberspace. In other words, it is a **dimensional** notion of cyberpsychology that takes care of implementing the psychological

profiling of persons and situations in cyberspace. The psychological study of group structures in cyberspace also follows a dimensional approach since it allows comparisons within communities and between communities to identify communication networks, leadership, norms, roles, status, and so on. Individuals as well as groups may be the focus of dimensional analyses as has been the case in the past among psychological researchers specialized in the study of individual or group differences (Cfr. 6.27.7.3). Psychological dimensions are also the basis for the study of human diversity in cyberspace.

The third meaning addresses the issue of the psychological processes facilitating or hindering human performance in the world of networked computers and hypermedia. This **process-based** notion of cyberpsychology stresses that analyses may be carried out at the individual or at the group level. It conveys that information processing processes such as sensation, perception, attention, memory, knowledge acquisition, conscious experience, tacit learning, for instance, play an active role in the way people behave in cyberspace and may be examined by capitalizing on models and procedures developed in cognitive psychology. In fact, during the last quarter of the 20th century, cognitive processes have been examined resorting to computers as a metaphor and as equipment to test the adequacy of models and predictions. However, networked computers and multimedia constitute a more sophisticated but related habitat. Computerized experiments in Psychology started in the 1970s and many findings obtained in experiments implemented in monochrome monitors or in low resolution monitors must be discarded since advanced multimedia products employ palettes of several millions colors that produce astounding visual experiences that cannot be produced in outside nature and so are unimaginable abroad cyberspace. The study of group processes in cyberspace enables the discernment of communities' formation, commitment and identity, of influences pervading each community, of decision making patterns and the value of minority dissent, of conscious and unconscious phenomena in a given community, of autonomy and effectiveness within a community. It requires a wide range of perspectives since a large array of cognitive and motivational components are involved. The number of interactions counts on the number of persons exchanging views or data in cyberspace. The kind of intergroup relations varies from community to community depending both on the technology and the subjects or contents approached.

The fourth meaning tackles the understanding of useful principles and guidelines that may improve, for instance, communication patterns, learning and studying strategies, the intended presence and visibility of individuals and groups in cyberspace. It is a **pragmatic** notion of cyberpsychology looking for psychological theories, models or findings that may contribute to improving the success of a homepage, a portal, an online e-business or e-commerce action plan. The focus of attention are those theories and models that work within cyberspace allowing a psychological understanding of certain behaviors and actions and the way of influencing its appearance or withdrawal. For instance, Gestalt psychology principles, formulated in the first half of the 20th century, have been used to ameliorate the design of multimedia pages and navigation tools. Findings derived from tacit learning theories have been implemented to reduce the number of procedural steps in financial transactions carried out by investors buying or selling shares on the stock exchange market via online. Heuristic techniques have been used to optimize testing procedures of complex hyperdocuments to identify missing links, errors, intended loops or unfortunate paths, before producing the final version on a CD-ROM or in a Homepage. The study of navigation processes, of social skills and transparence in

the net, of sense of identity, of normal interactions held in virtual reality zones, for instance, have also been under the scrutiny of psychologists. The pragmatic approach favors a focus on normal behavior and on normal people in an unusual surrounding, cyberspace, that flows towards a normalization state.

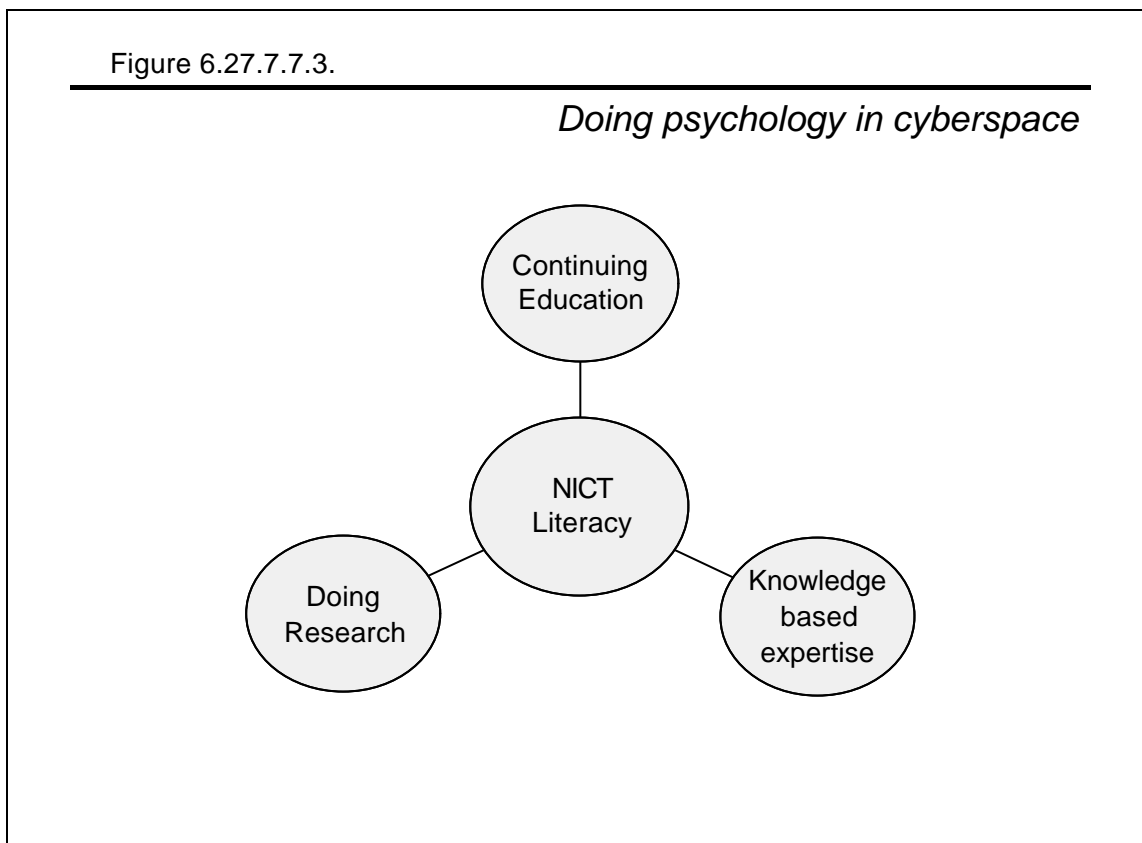
The fifth meaning focuses on the study of personality types, roles, disorders, conflicts arising out of the possibility of resorting to an open or a covert identity of individuals and groups in cyberspace. It is a **psychopathology-biased** notion of cyberpsychology. It is unclear if this line of action follows the steps of headlines and yellow journalism or whether the columnists and investigative journalists have a preference for this kind of studies. The consequence is that the visibility of this perspective is very high in the mass media compared to other perspectives. So problems such as Internet addiction, liking and loving, flaming and fighting, pornography, gender frictions appear on the front page of newspapers or magazines incorporating comments and analyses of psychologists, many of them experts in very specific fields but not in cyberpsychology. The visibility is increased because often controversies or disparities are enhanced, marking the contrast between expert accounts and "on the street" opinions. This perspective suits cyberpsychology down to the ground: there is a large element of morbid fascination towards clinical psychology issues. It is the great cross to bear by psychologists mainly interested in the psychology of normal people.

The sixth meaning appraises cyberspace as a huge virtual library of all kinds of assessment procedures, books, discussion groups, journals, newsgroups, papers, proceedings reports, software, surveys, and syllabus that may be of actual interest for any psychologist interested in keeping up to the minute in everything regarding theoretical, technical and practical knowledge. It is a **knowledgeable** notion of cyberpsychology requiring the use of filters to separate the wheat from the chaff. The same criteria that are useful in the analysis of scientific papers are also useful to discriminate among online resources: audience, authority, coverage, and objectivity, precision, setting, and contemporaneousness.

Other meanings crop up also, but the scope is rather narrow, for instance, cyber-therapy, group-therapy online, online counseling, tele-health psychology, the mental web, the psychology of human-computer mismatches, and web-based learning. These are specialties or specificities growing to produce fruit or shade in the incoming future.

5. Cyberpsychology in action: A New Field of Expertise

In the past section Cyberpsychology has been approached drawing attention to a conceptual perspective by highlighting the existence of six noteworthy and idiosyncratic notions. Now it is time to look for an operational perspective on Cyberpsychology. Figure 6.27.7.3. situates the main components that, together, shape the "*know how*" and "*know what*" that psychologists must manage in the process of making headway in this new field of expertise.



5.1. The literacy barrier in NICT

The first challenge seems to be surpassing the literacy barrier in the area of NICT. That is, newcomers must learn what cyberspace is all about, and what are the basic tools and resources. In other words, mastering the mental picture of what is behind high-tech as well as the large set of sociotechnical skills smoothing the way for operating and surviving successfully in the net

At a first glance the purpose is acquiring literacy in networked computer systems as a first step in the process of identifying and defining problems as they appear on the screen. A person is literate when he or she can identify and define a basic failure in the computer or the net and can ponder and find out reasonable ways of dealing with it. A person is illiterate when he or she gets scared and spreads alarm and despondency as soon as there is something wrong. A person is functionally literate when he or she can engage in exploring likely causes and basic courses of action to deal with the problem and postpones the call for help until he or she acknowledges that there is not an easy solution to the problem. Functional literacy in NICT is the point of departure for an effective functioning of any cyberpsychologist within cyberspace community. Computer illiterate persons increase the running costs as well as the traffic jams, contribute to slowing down the interactions and break down the quality of life in cyberspace. A cyberpsychologist is not an expert in computers, but, at least, a functional literate who knows how to deal with

- Hardware paraphernalia and conflicts such as modems, fax, ISDN, internal cards, ports, LAN, plug and play, monitors, scanners, zip disks, printers, UPS and so on;
- Software paraphernalia and conflicts such as compatibility of programs, free versus proprietary software, shareware, backup programs, IRC, netmeeting, encryption, compression, upgrades and so on.
- Multimedia standards such as CD-ROM and DVD modalities, kits, speeds, reproduction, conversions, UNICODE, databases, reference system and so on.
- Techno-structural aspects such as Internet engineering task forces, domain names systems and authorities, public and private networks, server-client architectures, service layers and standards, time zones, reference documents, official bulletin boards of reference in the net and so on.
- Management issues and dilemmas concerning files, protocols, upgrading, hard disks, diskettes, directories, compatible formats, transfer, net-etiquette, backups and so on.
- Searching strategies as related to search engines, Gopher, X-500, Whois, WAIS, SQL databases, boolean markers, linguistic repertoires and so on.
- Authoring tools such HTML, Java, graphic and audio formats, animations, movies, copyrights, layouts, editors and assistants, and so on.
- New trends to assess emerging and declining technologies, innovative firms and products, compatibilities, limits and feasibilities

In non-English speaking countries there appears again and again an unresolved technical matter. It is the old issue of ASCII versus UNICODE. ASCII is the American Standard Code for Information Interchange. It is a 7-bit specification used for representing characters as numbers; it has been optimized for the English language characters. UNICODE is a 16 bits universal code designed to represent every character in every language as well as a large number of symbols in an internationally standard way. Cyberspace has been tested regularly under ASCII and everything seems to run correctly. The UNICODE stays on the waiting list and many technical complications arise when moving among documents using non-English characters and symbols. The implementation of UNICODE was devised for the year 2000 to converge with the 2 digit problem in the identification of that year but the case has been adjourned sine die.

5.2. Continuing online education in Psychology

The second challenge seems to be the use of cyberspace as a continuing education scenario for students and graduates in psychology, as a continuous learning and renovation tool for scholars and practitioners. There is a shift from higher education models centered on the campus where learning experiences take place as a synchronous process to higher education models where learning experiences occur somewhere in a multidimensional space in an asynchronous manner.

Courses are becoming different because the content is not on the blackboard or in a printed book, but in hypermedia documents where text, sound, graphics, animation are integrated and embedded. In their childhood present students were rocked with cartoons and animation movies; they get used to videoclips when they were teenagers. Many of them have not read "Don Quixote", "Hamlet", "Faust", "Le malade imaginaire" but they know about these stories through

the TV or a CD-ROM. Cyberspace has changed the way the younger cohorts consider what is an acceptable content, what is an acceptable syllabus, what is an acceptable content provider. Special emphasis and developments take place in the way resources and contents are made available.

- The virtual classroom It means making available on the Web site all kinds of documents and materials the students will need to reach the learning goals for a given course. Messages exchanged favor the maintenance of personal links among students and among students and professors; it means creating the feeling of a community involved in the same program. It is possible to create an open space for experimentation, for making trials or group presentations, for facilitating the expression of ideas as well as applications among students. It is quite easy to create scenarios and procedures to carry out formative or summative evaluations by testing advances or stagnation in the learning process. It is a showcase where the students may exhibit the outcomes of their own work and observe those of fellow peers. A virtual classroom becomes a learning space shaped after certain psychological and educational principles.
- Web-based projects for the classroom It is a complementary activity. Information available at different websites, discussion lists, newsgroups and so on is used to create a contrast between what is taught in the classroom and what may be verified online. For instance, a follow up of messages exchanged among teenagers in one or several newsgroups may be a way of studying values, motives, beliefs, and priorities unobtrusively. A follow up of messages exchanged in discussion lists focused on the same subject but using different languages may be an adequate tool to produce cross-cultural online research in an unobtrusive manner.
- Web-based training. Three modalities have been tried successfully during recent years. The basic one is text and graphics combined in a hyper-document available online produced in the same way as paper-based course materials. Interactive web-based instructional designs are the second modality where exercises are performed online and tutorials are in a CD-ROM or in a high speed or a broad band networking system. When the students manipulate graphic objects in real-time, for instance a simulation or a game, it is the realm of interactive multimedia programs ready for use through a website. This third modality is held currently in an Intranet system. Currently Web-based courses facilitate self-paced learning.
- Web-based assessment and evaluation: Web cameras may be used to observe for instance very young children in a day care center. Within the context of a seminar on Child Psychology these webcams may be very useful to train students interpreting children's behavior in an unobtrusive manner. In a similar vein, in the area of human resource management, after reading and observing how to enter information in a common record keeping system in personnel departments, students may be observed entering data, accessing and modifying records. The simulation may include feedback when they behave in an incorrect manner. Some forms of feedback may be mechanized, for instance, online comments that pop up on-screen and some other forms of feedback may be forwarded via e-mail or by chatting.
- Web-based follow-up of the transfer of training: Currently the relationship between professors and students end the last day they meet for the exam. For instance, there is a Rorschach test seminar where the students stay in touch with the professor once the course is ended via online. Students scan Rorschach test correction forms, send them to

the professor reporting a diagnosis via email and soon afterwards obtain the feedback of the professor playing the role of a mentor. This procedure, for instance, has been used to connect psychologists living in Italy, Spain and Argentina.

- Online case studies: Multimedia and online tools have introduced a new standard with regard to case studies. For instance, clinical histories of patients have been scanned and made available online in the Intranet of the campus. Students have access to these databases of records, may download into diskettes the information they consider convenient and, finally, they submit an assessment. The professor gets the report but also controls what kind of information the student downloaded and analyzed and what information she or he has omitted or failed to download. Video-clips of interviews held with the patient, x-ray photographs, computerized axial tomographies, blood tests, projective tests, scanned manuscripts or photos may be accumulated in a CD-Rom and handled directly by the students as an indoor or outdoor activity. Similar approaches to case studies have been tried in educational psychology and in work and organizational psychology.
- Online seminars: Ph.D. seminars may evolve combining online and offline sessions. At the beginning the professors and the students meet a few times in a real classroom to specify procedures and to analyze constraints. Afterwards the seminar is held online and all the messages, reports, and dialogues happen in a web-conference room. There are two varieties, simultaneous talks (chat) and asynchronous talks (something between a discussion list and a newsgroup). The simultaneous talks are filed and may be the subject of a textual and content analyses.

The target is the idea of a virtual campus in Psychology, especially addressed to those students, graduates and scholars who are fluent in English. Cyberspace expands the number of options for interactions among advanced and inexperienced researchers, among faculty and students sharing only the net and the common field of expertise. The number of students combining learning experiences on the campus and somewhere else via online is growing. If they are fluent in English the possibilities are broader and quite often cheaper and more productive. There is a higher probability of increasing the number of agreements between advanced research or teaching units in different regions deciding to share resources only among students enrolled in the respective program. It means the proliferation of restricted knowledge-based circles in Psychology that may be accessed and visited via Internet. A new category may appear, online and offline campuses. The journal Behavior Research Methods, Instruments & Computers (<http://www.psychonomic.org/brm.htm>) devoted an special issue in February 1999 to “teaching demonstrations and tutorials” in statistical methods, research methods, perception, attention, and memory, among others.

5.3. Doing online research in Psychology

The third challenge deals with changes in the way of carrying out psychological research benefiting from the plethora of online possibilities. The inspection of the history of Psychology expose to view the fact that pioneers and leading figures have been people who were many of them curious and some of them fond of the prevailing technologies at that time.

- W.M. Wundt (1832-1920) combined introspective and psycho-physiological methods to a wide range of subjects such as reaction and inspection time, word associations,

the elaboration of judgments and the expression of emotions. He transformed elegant physiological methods to elegant psychological methods in his laboratory.

- The intelligence test of Alfred Binet (1857-1911) had many details in common with the medical efforts to standardize procedures used by health professionals to gather and make sense of the information obtained by interviewing patients.
- The inkblots produced by Hermann Rorschach (1884-1922) became the well-known Rorschach test as a consequence of the advanced use of the engraving technology that became a standard in the 1910s. The importance of original engraved plates or of very reliable reproductions of such original plates has been stressed to students making use of this collection of gravures.
- The box developed by Burrhus F. Skinner (1904-1990) is a typical by-product making the most of electromechanical devices developed in the aftermath of the Second World War.
- The overuse of the analysis of variance by researchers in our laboratories is a by-product of the analysis of agro-biological and agrochemical data generated by the controlled variation of treatment conditions in manipulative experiments. The analysis of variance designed by Ronald A. Fisher (1890-1962) was feasible with the technology available at that time whereas the general linear model and the multiple regression and correlation system outlined by Francis Galton (1822-1911) and Karl Pearson (1857-1936) had to wait for the computer era. Historical conventions are present in journals and textbooks and so the analysis of variance as a long established technique has prevailed over more sophisticated and coherent frameworks such as the multivariate analysis or the non-linear analyses.

There have already been some discussions on the methodological advantages and disadvantages of using the Internet as a space and as an instrument for scientific investigation in Psychology and social sciences disciplines. Quantitative and qualitative analyses have been implemented in a way similar to current uses in laboratory or field studies. There is however another technique, known as Data Mining, rarely used previously in Psychology. There are some elements in common with meta-analysis because both examine large pre-existing databases to prompt new information. However Data Mining allows a follow up of the paths pursued in cyberspace by an individual during a given period of time. A critical dilemma is fixing up the method of validation. There is a preference for simultaneous comparisons of web and laboratory or field study samples and the use of regression analysis to test the goodness of fit.

There is no room for summarizing the arguments here, but at <http://www.psych.unizh.ch/genpsy/Ulf/Lab/WebExpPsyLab.html> there exists a laboratory specialized in Web Experimental Psychology studies where these controversies have been collected and published online and offline. For those interested in getting ideas and suggestions about how to use microcomputers in their teaching and research, the Society for Computers in Psychology (<http://www.lafayette.edu/allanr/scip.html>) supplies an online reference scheme.

What kinds of experiments may be carried out online? Here are some examples organized after the notion of cyberpsychology that prevails and commented above. Articles published in the peer-reviewed journal "Cyberpsychology and Behavior" from 1998 to 2001 have been used as input for this tentative inventory as well as other online catalogues.

Instrumental perspective

- Using the Internet to treat generalized social phobia and avoidant personality disorder.
- Applications of virtual reality to
 - Psychological assessment
 - Social skills training,
 - Document coping deficits after a stroke,
 - Rehabilitation programs after surgical interventions,
 - Treatment of body experience disturbances,
 - Treatment of chronic combat-related post-traumatic stress disorders,
 - Improving the quality of life of bedridden patients and elderly,
 - The treatment of impotence and premature ejaculation,
 - The prevention of smoking among teenagers.
 - 3D audio interactions by blind children.
- Functionality of groupware interfaces facilitating or colliding with collaborative interactions.
- Face to face versus online brainstorming sessions.
- Computerized touchscreen video versus paper and pencil assessment of dietary behavior.
- Evaluating web-based learning environments.
- The chat room phenomenon: reciprocal communication in cyberspace.

Dimensional perspective

- Sexuality and e-commerce: positive connections, and negative patterns
- Internet romances, virtual attraction and networked seduction.
- The Internet gender gap: why men use the Internet more than women.
- The missing link in information security: three dimensional profiling.
- Differential age effects on usage and perceptions of the Internet.
- Gender differences in emotional expression online
- Online sex shops: phenomenological, psychological and ideological perspectives.
- Mistresses of their domain: how female entrepreneurs in cyberporn are initiating a gender power shift.
- Identification of personal information management strategies among heavy email users and ranking by its tactic usefulness.
- Aspects of presence in teleworking and its measurement in virtual environments.
- How the older net-citizens compare with their younger counterparts.
- Promoting independence in older persons through the Internet.
- Focus, locus and sensus: the three dimension of virtual experience.
- Social presence in home tele-applications.
- Analysis of attitudes toward computer networks and Internet usage.

Process-based perspective

- Experiments on the visual encoding of environments or on mental rotation and spatial

skills using graphic and animation programs where pictures may be modified at will by the subjects and by the experimenter.

- Decision making experiments using real values in the stock market and investment decisions on a real or a simulated basis.
- Computer mediated communication patterns within groups of men, of women and mixed, taking into consideration the size of the group.
- Visual information processing and spatial orientation in 3D and VRML scenarios accessible online: distal and proximal stimuli, 360 degrees rotation, the role of context in words recognition.
- Cognition and interpretation of gestures using static as well as animated images, manipulating backgrounds, clothes, make up, sex. The same person may be portrayed as male or female by changing the picture digitally.
- Discourse processes studied through online synchronous and asynchronous communication channels varying details such as message length, narrative vs. expository messages, linguistic gendered biases, and text presentation.
- Personal stories within virtual environment: case study of cancer patients.
- Interbrain frame: interaction and cognition in computer mediated communication.
- Age-related changes in the human cognitive mapping system.
- Communication and cooperation in networked environments.

Pragmatic perspective:

- Exposure therapy and systematic desensitization by resorting to virtual reality as a framework for the treatment of
 - Agoraphobia (by projecting images of oneself in the crowd),
 - Claustrophobia (by displaying images of chambers with moving walls),
 - Fear of flying (by displaying 3D images of several flying conditions),
 - Eating disorders (3D figures ranging from under to overweight),
 - Fear of heights (by graded exposure to crystal-clear elevators),
 - Fear of driving (by simulating tracks, accidents and climate conditions).
- Transfer of learning models in bridging the gap between virtual reality and real environment.
- Gestalt Psychology principles as Web design guidelines to influence readers' behavior and preferences.
- A model for providing psychotherapeutic interventions by resorting to interactive e-mail journals.
- Constructivist models for teaching and learning experiences design on the web.
- A Five dimensional model of online and computer-mediated psychotherapy.
- Online self-help groups or websites hosted by mental health professionals.
- Redefining therapeutic success with virtual reality exposure therapy.

Psychopathological bias

- Internet addiction
 - The vulnerability of college students,
 - The emergence of a new clinical disorder
- The bad boys of cyberspace: deviant behavior in a multimedia chat community.
- Compulsive Internet gambling.
- Virtual sex addiction and pornography: when cybersex becomes the drug of choice.
- Victimization online: the downside of seeking human services.
- The relationship between loneliness and Internet use and abuse.
- Psychological characteristics of compulsive Internet use.
- Electronic mail dysfunctions.
- Sensation seeking and collegiate vulnerability to Internet dependence.
- Cyber disorders and pathological Internet use.
- Excessive Internet use: implications for sexual behavior.
- Image management in bondage, discipline and sadomasochist subcultures.
- Strategic and fake identities in cyberspace

Knowledgeable perspective

- Digital library uses for research activities in Internet and in Intranets.
- E-business areas devoted to the making and unmaking of the ego self-images, to cybermind and cyberbody expressions by resorting to avatars as a projective techniques.
- Online applications in Clinical Psychology and Psychiatry: role in patient care, education, research and communication.
- The Zachman framework: an information system architecture for disease management systems.
- Information and misinformation online: recommendations for accurate information retrieval and evaluation.
- Evaluating the women's health matters website.
- Online activism for women rights.
- Life-long learning opportunities for seniors on the web.
- Sports information seeking on the Internet: a study of soccer fans.
- In search of lesbian or gay communities in Internet.

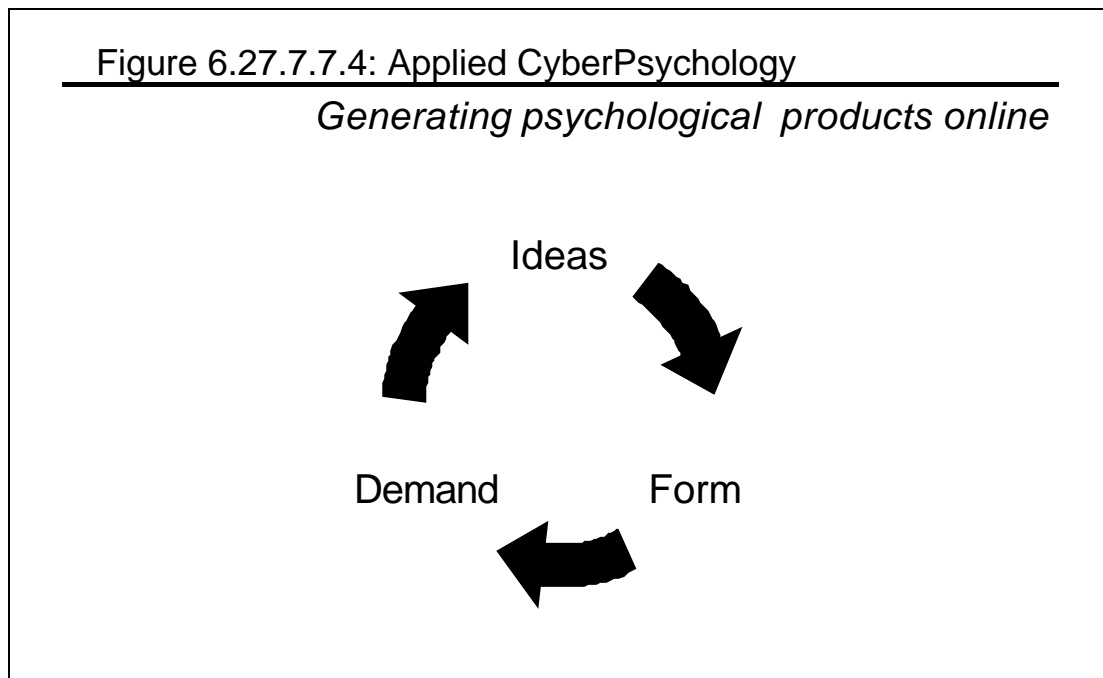
All kind of surveys are available on issues such as suicide, food beliefs, hand washing patterns, long term effects of war experience, health role beliefs, language usage, child disciplinary practice, childhood and adult life experiences, anger disorder, stress, grief reaction, romantic relationships, marital affairs and so on. This possibility was opened in 1995 when version 2.0 of HTML was agreed and made public. It includes tags for producing "fill-out forms" that may be answered interactively. When the button "submit" is clicked the data typed are sent to the server and an ACTION command identifies the name of the program that will process such a set of structured incoming data to produce a matrix of tabulated results, ready for further statistical analyses.

The journal *Cyberpsychology and Behavior* (<http://www.liebertonline.com/>) is the natural setting for making papers selected after peer review process.

5.4. Online knowledge-based expertise

The fourth challenge has to do with the usefulness of Internet as a tool in professional practice taking advantage of knowledge-based expertise appropriate in each specialty. Education and research make sense if there are psychological products that are in demand.

This is the basic framework allowing the setting up of a psychological product for cyberspace following the steps illustrated in figure 6.27.7.7.4. The point of departure is bringing into focus one or several psychological **ideas** the psychologist may consider fertile enough to face or solve actual problems worrying present or potential customers. The second step requires finding out an attractive **form** congruent and powerful in cyberspace. The adequacy of the form is the key to its feasibility and to procure a favorable reception of the product. It is through the form that an idea becomes a psychological product or service well grounded in cyberspace. In other words, an idea plus a form, together, make sense: the idea is molded in the form, has an appearance. It is an invention that may be named, registered, patented or a copyrighted. The third step involves the **demand**. It is the destination that may be preordained. Often the procedure is honest. It is a matter of gathering data about the popularity of a related tool or an approach alike in cyberspace. A field study may be carried out to find out the degree of acceptance or how affirmative replies may increase by reshaping or polishing up the product or service.



Other approaches are quite dishonest. Here is a sophisticated example reported by the

Washington Post in the issue of July 15, 2001. From 1997 to 1999 the number of references in the mass media to social anxiety increased from 50 stories to about 1 billion news and in the large majority of chronicles there was this statement: Paxil (in the US) or Seroxat (in the EU) “is the first and only approved medication for the treatment of social anxiety disorders”. Even an online communication channel for stories of patients and database of press releases was launched at <http://paxil.bizland.com/> as a part of an advertising campaign coordinated by Cohn & Wolfe at the behest of pharmaceutical giant Glaxo SmithKline. Several Psychiatric Associations in the US and many other countries as well as Psychiatric units in hospitals became actively involved in the campaign. In 2001 the spokesman of the American Psychiatric Association acknowledged that “the only way for nonprofit groups to get out a potent public health message is to team up with a pharmaceutical company with deep pockets”. The complete chronicle may be read online at <http://www.washingtonpost.com/wp-dyn/articles/A1208-2001Jul15.html> and makes clear that this is a typical case where artificial news molded the demand for a pharmaceutical product with the support of non profit organizations coordinated by a marketing firm.

Applied Cyperpsychology exists as soon as there are goods or services available online and there are users, visitors demanding on. It seems to be the case as other authors in this Encyclopedia have emphasized how different areas in Applied Psychology contribute to an increase in the quality of life in the society. Here are just a few examples of new psychological products and services developed by shaping or accommodating into an Internet compatible form one or several psychological ideas that are now demanded and circulate in cyberspace.

- Some clinical psychologists make use of projective tests to unveil characteristic traits, feelings, attitudes and disorders of patients. This approach may be reshaped to cyberspace culture. For instance, a patient may be invited to visit and select web pages he or she likes or dislikes. The collection of favourite sites may be analysed by the clinical psychologist to find out patterns, preferences and obsessions. Another variety may be inviting the patient to learn how to produce web pages as a part of an occupational therapy program and later inviting him or her to produce a personal web page. The psychologist may explore the set of hyperdocuments generated as a self-portrait of the patient. Estimates indicate that 3 out of 10 Internet users have their own WWW homepage, and at least one section includes a self-portrait.
- Social support groups have been introduced and favoured by educational psychologists to assist, for instance, parents of children with special needs, such as, mental retardation, development delays, hyperactive children, gifted children and so on. It is considered a stress-adjustment technique, insofar as some or many of these parents show symptoms of shame, feelings of disgrace, perplexity, disorientation, bewilderment, shock. Discussion lists have been used to provide psychological assistance online. Strong differences have been detected when comparing the profile of parents obtaining face-to-face support in the schools or support in online discussion groups where anonymity may be maintained by resorting to an alias. In the schools mothers are over-represented (at least 1 out of 10) whereas online there are as many mothers as parents (that is, fifty-fifty). In online discussions fluency and expressiveness are noteworthy and conspicuous as compared to group discussion where self-image and self-esteem introduce a barrier.

- Post-sale maintenance services are obligatory for many products marketed by private companies except training programs in the area of Human Resources Management. Some Work and Organizational Psychologists start to use discussion lists as a tool to do a follow up of how trainees use what they have learned in a seminar when they come back to the workplace. This service is a part of the main contract or is contracted separately. During a period of 6 to 12 months trainees have access to trainers and a variety of role episodes take place. For instance, some trainers become personal coaches, others act as tutors for some time, a few are not contacted at all.
- Many people are prey to an irrational fear when they have to speak in public. Via Internet it is possible to assess the severity of the problem, to organize an “ad hoc” treatment program, and to evaluate the outcomes and the degree of effectiveness. Psychologists at the University of Castellon and Valencia in Spain have designed the protocol and the whole system may be applied to carry out assessment and treatment procedures online reducing to a minimum the contact with the patient.
- Fear of driving has been approached also by making use of cell phones technology. Once the patients have passed the first phase, sessions of exposure where driving is simulated in an scenario of virtual reality, they have to pass phase two: “in vivo” driving sessions. The psychologist follows the driver in another vehicle and stays in touch with him or her using the cell phone in moments of increased anxiety. Safety issues must be under control, for instance, in a road closed to traffic. The short-distance presence and feedback of the psychologist seems to be instrumental in overcoming the fear of driving.
- Relatives of severely ill patients tend to develop feelings of guilt when they cannot visit the beloved person in the hospital with the frequency they consider reasonable. Often interpersonal relationships deteriorate if the relative travels abroad and loses regular contact with the sick person. Web cameras have been installed in several sections of the hospital and the relatives may visit virtually the beloved inpatient or maintain short interviews with different members of the health staff by fixing an appointment to follow up the ups and downs of the patient’s evolution. Some health psychologists use the web cams to stay in touch with the relatives suggesting to them some topics to be approached during the next net meeting with the sick person.

These are just examples of what can be done by exploiting the resources already accessible in cyberspace. Search engines such as <http://www.cop.es/database/>, which is specialized in Psychology, provide URL address of applications and developments in Applied Psychology. Further details may be found in the homepages of the

- American Psychological Association (<http://www.apa.org/>),
- European Federation of Psychologists Associations (<http://www.efppa.org/>),
- International Association of Applied Psychology (<http://www.iaapsy.org/>),
- International Union of Psychological Science (<http://www.iupsys.org/>).

5.5. The code of ethics

Some concerns have been expressed by national and international associations of psychologists concerning the provision of psychological services in cyberspace. The standing committee of ethics of the European Federation of Psychologists Associations (EFPA) has drawn up a first draft that was approved by national delegates in the general assembly held in London in July 2001. The full version is available online at <http://www.efppa.org/> but this general principle brings in the basis: “the ethical dimensions of professional practice as a psychologist are the same whether such practice is in person or at a distance, whether via the Internet or some other non-direct means”.

Points of concerns are raised concerning the identity of the psychologist, the identify of the user and the protection of the transaction. These are questions dealing with security issues. The recognition of limits and the maintenance of records are issues concerning the confidentiality of information accrued. The entire document is an invitation to cautiousness in each association member and in each individual member or group of members.

The Spanish system is very convenient because only registered members may use in the email address the domain name **@cop.es** that is owned by the Spanish Psychological Association (COP = Colegio Oficial de Psicólogos). This is a very convenient way of supplying a clear-cut and unmistakable identity of any psychologist supplying a service. The EFPA has invited national psychological associations to create an online catalogue of registered members websites at the disposal of the customers. It is already a system supplied by the Spanish Psychological Association since only members have free a homepage at their disposal under the domain name cop.es. The EFPA recommends a clear identification of the client accentuating that anonymity may be accepted only in exceptional circumstances. Special care must be taken when working with children or other vulnerable clients. Encryption systems as well as safe servers are commended as a guarantee for the security of any transaction between the psychologists and the customer. Technical assessment is recommended to preserve individual records and backups but taking into consideration that the customer may also accumulate and stock the information and communication exchanged. Some problems arise when the psychologist and the customer reside in different countries.

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