a maximum of 50,000 users on-line (in the entire world) at one time. Does this mean that the future is bleak for virtual worlds? Not at all.

Despite the fact that virtual worlds have experienced a boom in the number of users over the last few months, they have still got a long way to go. Furthermore, the characteristics of these platforms are so new and powerful that they are clearly here to stay. Within this context, corporations have been the last ones to jump onto the bandwagon. These corporations have only recently started to launch advertising campaigns, taking advantage of the vast amount of free publicity that any initiative in a virtual world could obtain.

To some extent, virtual worlds are now what the Internet was 15 years ago, a new and promising space that has yet a long way to go, which is still in its infancy. The difference lies in the fact that corporations will probably have less time to adapt than they had with the Internet. At present, there are already many advanced Internet users who exploit the Net to its full potential. As virtual worlds incorporate greater functionalities and the learning curve (the time it takes to learn how to use it) starts to subside, there is no doubt that this significant number of Internet users will join these worlds, creating their own virtual lives. Indeed, we must not forget the new generations of youngsters for whom the virtual world will be something natural, which they have experienced from a very young age.

We are convinced that these new generations will no longer consider that having a second virtual life can be a problem, a reflection of asocial behaviour, or of difficulties in establishing relationships, it will be perceived as something completely natural, as we presently consider watching television, going to the cinema or reading a book.

The Mare Nostrum Spaceship: A Panspermic Metaverse

[David ZEHNTER [APFEL]
The Astronauts' Club

"It is imperative that we give up the idea of ultimate sources of knowledge, and admit that all knowledge is human; that it is mixed with our errors, our prejudices, our dreams, and our hopes; that all we can do is to grope for truth even though it is beyond our reach."
Karl Popper

The Roadmap

The aim of the Astronauts' Club, since its foundation, is to carry out an interstellar journey. To fulfil this goal it aspires to construct the Mare Nostrum Spaceship. This spaceship is inspired in the panspermic theory and bases its functionality on the idea of the metaverse and neurotechnology. We define its vision as a "panspermic metaverse", which is understood as an artificial panspermia, an advanced virtual world simulated by a supercomputer in which a crew of virtual astronauts lives while travelling through our galaxy, the Milky Way. Thanks to neurotechnology, the astronauts can overcome their biological limits, and therefore the time-space barrier. The mission of the Astronauts' Club is to help develop strategies that will facilitate this goal. The first phase of this mission consists in the compilation of a roadmap that covers a series of key and relevant technologies for the pursuance of this goal. The roadmap serves as a futuristic analysis on the most recent advances in the following fields: the metaverse and virtual worlds, the sociology of the metaverse, augmented reality, brain-computer interfaces, neuronal prosthetics, tele-robotics, neurotechnology, virtual

simulation, supercomputation, the metaverse as a function of the exploration of outer space, etc.

What is the point nowadays?

The roadmap's purpose goes beyond the search for technologies that will facilitate interstellar travel in the long term. In the short term, it also provides us with a panoramic view of these aforementioned technologies, especially to structure and visualise the topology of relations between them, stimulating their collaborative infrastructure and their interdisciplinary coherence. It will benefit numerous objectives in very different fields. The final, utopian goal, the interstellar voyage, regardless of whether it is viable or not, serves as a vanishing point in the human horizons wherein such technologies are focalised. The roadmap aims to provide guidance within the tangled mass of proposals, ideas, sciences and technologies that appear nowadays at accelerated and at times disconcerting speed. The roadmap intends to simplify and clarify the complexity of coherences and is conceptualised in a dynamic, modular and extensible manner. The aim is to continuously update its chapters, expanding them and adding new chapters. The roadmap is tasked with the search, observation and evaluation of concepts and strategies that have already undergone their proof-of-concept while it also identifies the obstacles, ethical implications and economic barriers to its development. The moment in which it will be possible to initiate phase two of the project - planning a specific model for the Mare Nostrum Spaceship- is difficult to predict, as there are still too many factors to be analysed. Nonetheless, this is not very relevant to our present situation. Moreover, a careful and detailed roadmap, with conclusive insight will help those it affects to react adequately and rapidly, as well as improving the performance of their consultancy functions.

The roadmap can be viewed in: www.elclubdelosastronautas.com/mns

Because there is hope!

Life requires growth. However, where can we grow? How? At what speed? For what purpose? Why do we play the lottery? To become millionaires! However, what shall we do with the money?

Why do we still talk of peace? Because it still seems possible!

The Manifesto

To fight for an unattainable goal has the insurmountable advantage of an endless struggle, thereby eliminating the possibility of boredom. Before abandoning the goal, its stimulus may fade away. The aim is to find a delectable goal that is known to be impossible to reach from the onset. Thereby, we are sure not to be disillusioned by the final result. An impossible goal cannot be imagined. An impossible goal is inconceivable even for a dreamer. Everything that we can dream of, and imagine is firmly rooted in reality and therefore contains a minimal coefficient of possibility. That is to say, all that we can imagine is possible. The first, and possibly last step to approach an impossible goal, is to set practically impossible goals, the most improbable and distant goals from the scope of our imagination, the goals that come closest to what is impossible. To explore and experience the universe in its broadest sense seems to be a valid adventure, which reflects our curiosity for life. That is why we call ourselves astronauts. To travel to the centre of the Milky Way, our galaxy, and discover advanced extraterrestrial cultures seems to be sufficiently unlikely to be valid for our approximation to the impossible. Having said this, it is still a specific and imaginable goal, that is to say, it is still sufficiently tied to reality and therefore, there is still a minimal drop of probability within its impossibility. Such a journey would require travelling a distance of 26,000 light-years over millions of years. It could even be

a journey in time, overcoming the boundaries of other parallel universes. We believe that the time-space barrier and the lack of technology prevent us from carrying out this absurd adventure. It is precisely this which motivates us to start and think, to struggle and work diligently within the realm of reason on how to possibly fulfil this goal. The struggle for the essence of the impossible gives us enormous drive and opens up our limited human and terrestrial horizons towards the conquest of new and distant territories, despite the fact that they may never be those of our main objective. To go step-by-step, not losing connection with reality helps us to maintain our course on this journey, which is in itself our goal. We are determined to overcome the barrier of impossibility. We are sincere pioneers. We do not hesitate to jump straight into the simple adventure of experiencing life. The only and true impossibility that remains is not achieving anything. Only nothing is impossible!
The Institut Fatima, a close friend of the Astronauts' Club, musicalised our manifesto: www.myspace.com/institutfatima

So away we go!

Given that the SETI (Search for ExtraTerrestrial Intelligence) project is not advancing much, we need a spaceship to search for extraterrestrials. Not only that, but we need something more powerful than that which NASA has to offer. For example, a ball of 3,325,994,827 litres of salty water exposed to outer space. It would maintain its ball-like shape due to the forces of gravity and its diameter would span one nautical mile. Lacking atmosphere; it would freeze instantly. We are to fire this ball into the cosmos as if it were a billiard ball. It will be the skeleton of our spaceship; we will be inside. The hard ice will protect us from meteorites as well as serving as fuel: ice = water + electrolysis > hydrogen + nuclear fusion > energy! We will install a nuclear reactor in the core of our ice ball, a mini-sun that will cheer us up as we travel through the darkest regions of the universe. This reactor will power the propulsion system and, thanks to its heat, will partially defrost the spaceship from within. We will take a couple of dolphins with us, the only biological beings on board -as in Noah's Ark- a sentimental memory of the Earth, and an offering for the extraterrestrials. The nuclear reactor shall also be our spaceship's first "spin-off", an Earth-saver, a reactor, better than ITER (International Thermonuclear Experimental Reactor), which will free us from oil, as well as being clean, safe and cheap. The war in Iraq has cost € 2,000,000,000,000 so far (Stiglitz and Bilmes), ITER only € 10,000,000,000.

Matryoshka

We are still missing the pilots' cabin, for us, the astronauts. Shall we be cryonised? No! That is too scary! Is it not? Something more comfortable, please! Why not take mother earth with us, and continue to live on her? We love her very much, don't we? Buckminster Fuller once said that the Earth is a spaceship. Let us make a copy of the Earth and take it with us inside our ice ball, leaving the original for those who stay behind. Therefore, as nostalgic astronauts that we are, we will not have to abandon our mother. We will turn it inside out into a concave form, and install the fusion reactor in its core, the artificial sun that will illuminate the Earth from within, finally validating alchemist Cyrus Teed's intraterrestrial theory of 1869. We will travel on a virtual clone, something halfway between Second Life and Google Earth. We will simulate all human beings, who will never know that they are on a spaceship. We will simulate our past, making them believe that they are really on Earth, which will comfort them. Only the members of the Astronauts' Club will know the truth of what is going on, as they secretly pilot the spaceship. As they are all weird and unknown artists, nobody will pay any attention to what they say. In this manner, our spaceship will be taking on the form of a matryoshka doll of encapsulated realities, as Nick Bostrom describes in his

Simulation Argument. Oops! ... Are we already on the spaceship? This is an unclassifiable question and doesn't count! It is best not know of things that could disturb us!

Where is the door to the spaceship?

A concave computorium capsule made of buckyballs (C60) in Fuller's honour, a quantum supercomputer that simulates the Earth in the form of a panspermic metaverse and its nostalgic virtual astronauts, a geodesic hard-drive encapsulating the nuclear reactor. How are we going to upload our minds onto the hard drive? With a Fire Wire? Roger Penrose and Stuart Hameroff claim that a quantum computer is necessary to simulate conscience, as their theory of Orch-OR (Orchestrated Objective Reduction) establishes that the microtubules in cells are quantum computers, responsible for conscience. Let us imagine a quantum computer, just in case, to ensure yet another "spin-off": An advanced D-wave, which is the first commercial quantum computer that does not work. Nevertheless, at present IBM's simulation of the human brain at the molecular level, the Blue Brain will suffice. Let us see if it can talk to us in ten years time, as its creator Henry Markram has promised us. Furthermore, let us see if Ted Berger of the University of Southern California manages to get his (artificial) hippocampus to work. Because, if he does not we will have to marinate our minds in something else. Vinegar perhaps?

Pills

Only a few years ago Fred Gage and Elizabeth Gould turned around some great paradigms in neuroscience. They expanded the neuron doctrine through neurogenesis. This doctrine stems from the work by Santiago Ramon y Cajal. The observations made by Gage and Gould represent significant steps forward in understanding neurogenerative illnesses such as Alzheimer's and Parkinson's, as the mechanisms of neurogenesis in some parts of the brain, such as the dentate gyrus, are relevant to such ailments. Corporations such as NeuroNova and Brain Cells Inc. are already testing drugs, such as sNN0031 and BCI-540 to stimulate neurogenesis in Parkinson's sufferers and depressives. A more "futurist" position is that held by Aubray de Grey who aims to "cure" senescence as if it were an illness. To do so this new generation of nootropic drugs may prove to be useful. Grey's ideas will probably generate greater and more aggressive controversy in our society once neurotechnology, computer science, robotics, genetics, etc. facilitate the possibilities for an overwhelming post-human metamorphosis. The abuse of nootropics as Adderall and Modafinil pointed out a while back are already common in student and military circles to improve their performance despite their inherent risk and danger. Barcelona, not only due to its history within the field of neurology (Ramon y Cajal), is a city that is open to ethical controversy regarding the gross cultural changes provoked by neuroscience, etc. The Mare Nostrum Neuro-Spaceship presents itself as an opportunity to create a platform for this debate.

Barriers

In our quest to carry out an interstellar journey and to find a medium that can sustain our souls during a voyage that is to last many millions of years, we face a series of constraints and limits: the time-space barrier, our biological limitations, the barrier of our own scruples, ethical implications and last but not least the financial constraints (¥€$). Therefore, best to not even try? Better to stay put as we are on Earth? Let us be honest with ourselves! The human being is too curious, more than any cat, to be able to let the matter lie. An interstellar journey can doubtlessly provide fundamental conclusions on our existence, revolutionary knowledge on the universe's phenomena, and we may possibly even encounter extraterrestrial civilizations

and cultures. Given the chance, a true pioneer would be unable to say NO to such an amazing journey. However, we are in Europe. Why not start to investigate something as advanced before the Americans do? If it turns out that we do not have this opportunity, chances are the next generation might have it. We have an enormous responsibility in terms of tackling these issues, right now! Because of its potential, this is both enormously destructive and constructive. Repressing our fears is not going to help, while it escapes from our grasp. Has it already escaped? Clearly, rather than overcoming our own scruples, we should focus on conquering the ethical implications and our corresponding fears, that is to say, to find bold solutions to avoid, or at least minimise, great harm to our future society. Our society is a universal society that will include the extraterrestrials that we might meet, as well as the animals that we slaughter en masse in neuroscience and medical laboratories, as well as the robots, who will one day gain awareness. Whatever will occur to our values of freedom, justice, democracy and human rights? What future awaits these values? What future awaits our own rights? Towards where is life evolving? Towards respect?

The Mare Nostrum Supercomputer

The Mare Nostrum Spaceship has stolen its name from the Mare Nostrum supercomputer of the Barcelona Supercomputing Centre. A supercomputer could be useful as a hardware tool to upload the astronauts' minds and the virtual world in which they will live during their journey. We know that the potential of computation is growing exponentially, as Moore's Law demonstrates. The next generation of supercomputers will have sufficient capacity to simulate a human brain at the molecular and genetic level, as is the final goal of the Blue Brain Project, of the École Polytechnique Fédérale in Lausanne. Incidentally, Spain investe € 25,000,000,000 in this project last year. This decade has seen an explosion in brain-computer interface projects in the US, Europe and especially China, and the first cerebral prosthetics are currently being tested on rats. Virtual worlds are starting to work on the sense of touch, while the first brain-computer interfaces to control videogames and virtual worlds with the mind are already on the market. All the necessary technologies to create an immersive and unlimited panspermic metaverse exist at present; all have fulfilled their proof-of-concept. All we need are an additional thirty years to put them into practice, and that is that! What else do we need for the Mare Nostrum Spaceship? Ray Kurzweil predicts that there will be surprises in the year 2042. Having said this Ray Kurzweil is not Nostradamus, he is according to Bill Gates, "the best person I know at predicting the future of artificial intelligence."

The Art of Science

Jonah Lehrer published an article in seedmagazine.com, in which he explains why science needs art. With various examples, he demonstrates how artists have always had an influence on scientists in their perennial search for the truth. "We know the synapse, but don't know ourselves." says Jonah Lehrer. Lehrer tackles determinism in practically all his articles. He affirms that our mind is not reducible, that it cannot be stuffed, nonetheless artists know how to construct models of human conscience that reflect the texture of the experience that is felt to be real. They capture parts of reality that reductionism cannot. Theodore Berger further says that, "a repairman does not need to understand music to fix your broken CD player." Berger's principle lies in converting cerebral functionality into mathematical formulae before truly understanding the complexity of the brain. The mind will always be a mystery, although some day it will rest on an artificial body.

THE ASTRONAUTS' CLUB
www.elclubdelosastronautas.com