

Right to Know, New Technologies and New Communities of Citizenship

Antonio Lafuente and Andoni Alonso

Is there a right to know? At first sight it seems so. Very few would deny such right in our century. Why is that, maybe because knowledge is a good with its own and distinct features: there is the old idea that truth would make us free. Also, differing from other goods knowledge is not exhausted when shared: transmitting ideas do not impoverish the giver; knowledge does not wear out when is spread or represent a loss. Therefore it would easy to accept that right because does not imply inequality. Universal education seems to respond to that basic conception that everybody *should have the right to know*. Education therefore allows people to know and to be able to know. It could be right to consider knowledge as a vital part for our well being as food, shelter, and security. Those are basic requirements for survival. But the interesting question for our paper is if there is a limit, if there should be something that should be kept in secret. That would imply the acceptance of a moral and political nature of knowledge. Here we find how this question can become difficult. We know the need to preserve some personal information in secret. If not basic elements of human life such as privacy and intimacy would disappear. On the other hand it is not easy to claim the right of intimacy in the era of computers and networks. Suspicious as we are, we tend to accept the evidence of an extremely invasive screening in our life, whereas we like or not.

Following the classical ethical pattern if knowing is a human activity this could be regulated by virtues. Therefore could exist limits to what to know and how to know. Privacy and intimacy is one place for instance where it seems clear to put boundaries. Interestingly enough we live in a technological moment where such limits are a mirage. Following Tomás Maldonado (Maldonado 1997) we live in the era where privacy is humiliated. Of course limits represents a difficult task to draw as Roger Shattuck (Shattuck, 1996) has pointed out. From

Francis Bacon on, knowledge has become a means to free humans from all pains and difficulties. Our knowledge about nature would free us from the original sin; we will be able to reconstruct our fallen nature, according to Bacon. This is in clear opposition to Bacon's past and also the need of boundaries comes up later. The Greek *Prometheus* indicates that limit and also Goethe's *Faust*, but those seem alien to Bacon's position. The difference between *scientia* and *curiositas*, virtue and the vice applied to knowledge begins to blur. Limits to human knowledge also define the nature of what is human, according to the classics.

But now and then still appear different claims about the need to control and *forbid* knowledge. This is the spirit behind bans like Pugash movement declared in 1970 about the recombinant DNA or to the ban on human cloning (both are linked)¹. There is the fear to go too far, to transform into *hybris* that knowledge: maybe we go too far and there is no comeback. Technologies introduce many times that kind of moral and political crisis that should be treated carefully. Also there is the conviction that certain issues should not be known in the benefit of concerned people but managed by the persons in charge. Experts, politicians, leaders can control the consequences of certain facts better if those facts keep hidden. Those issues arise not only from scientific and technological questions but also from political and social. Scientific and technological knowledge have an unavoidable political and social side *per se*. Galileo's defense of Heliocentric theory and Darwin's Evolution theory are classical examples of how scientific knowledge has a deep impact in society, power and politics: both theories changed the place of human beings in the universe and political and religious power felt threatened. Still there is a fight about Darwin's theory today.

Nevertheless this paper does not go on how to draw a line between what should or should not be known, how to establish a general ethos on knowledge. Instead we would like to reflect on how certain group of persons, certain communities pursue knowledge because they understand it as a commons. The reason for that view is easy to understand: they see that knowledge as a need to go on, they are *concerned* about what that knowledge means. Maybe it

can be stated in another way. We depart from the position taken by John Gray (Gray, 2002): we consider science in an specific way; science does not only refer to the truth but also to the needs that human beings have to survive in this world. So in a sense scientific and technical knowledge are the way to cope with facts, dangers, risks and possibilities. So our aim is to show how communities of concerned people seek specific knowledge precisely because they are concerned, they need to survive, to improve their life. So it goes on questions about power and benefit. This means to add a political ingredient to knowledge. Right to know *certain* things becomes therefore part of the political agenda. Rephrasing Bacon power likes to hide and a political duty is to reveal some of those secrets. Censorship is not gone despite of the general acceptance about the knowledge as a good that should be available to anybody needing it. Control of information and knowledge is present nowadays in different ways that was in the past. In the society of information, knowledge becomes a scarce good that can be sold; maybe it is the most valuable good from an economy point of view. Knowledge, as always is also a way of control. Both aspects will be considered.

Our paper consists in a set of examples where we see how this right to knowledge was the starting point to create communities. From environment to technological developments such as free software and cryptography, there is a continuous current dealing with restriction of knowledge and the attempt to break it. All of them have some in common. That's to say, the need to generate or gain knowledge because it is important for those communities; sometimes are vital, and sometimes affect seriously basic civil rights. Also those communities belong to an old tradition although new communication technologies imply a change the game rules. Therefore this is not a criticism against science and technology. Many times those communities are hybrids of experts and laypersons. That is interesting because what joins both kind of people is precisely what was said before: they have in common to feel concerned. But our position does not go on a criticism in science itself. Science and technology are realities in the world that cannot be denied or suppressed. Instead it is a criticism on *scientific policy*, how

governments, companies and interest groups use and conceal knowledge for various reasons: profit, blind faith in progress, patronizing attitudes and so on. So what we have is different group of people that ask for, generate and spread knowledge as a duty pertaining citizenship.

Civil Protest and Need for Knowledge

Silent Spring (Carson, 1994) is one of the pivotal books for the present environmental movement, it can be considered as a basis for modern citizen's fight to preserve nature. Its author, Rachel Carson was a scientist, a biologist worried about the effect of human action upon nature. Post Second World War was the time where industrialization got its full swing and showed its power of destruction. Carson's *The Sea Around Us* (Carson, 1989) become a best seller and supposed a change in her career. In fact Carson retired from her post at U.S. Fish and Wildlife Service and devoted to write about nature. The use of pesticides and its ecological impact attracted her attention and devoted four years to write the book. Carson began a completely independent study on the effects on DDT trying to show how this chemical pesticide erased all form of lives, including humans. The book was a complete success; public was aware of the perils on using pesticides and promoted the movement for conservation.

Being a hallmark, *Silent Spring* became first a polemical book *before* publication. Carson confronted different ways of attacking her work; she was a woman so an emotional part is assumed in her struggle. As Al Gore writes: "*The attack on Rachel Carson has been compared to the bitter assault on Charles Darwin when he published The Origin of Species. Moreover, because Carson was a woman, much of the criticism directed at her played on stereotypes of her sex. Calling her 'hysterical' fit the bill exactly. Time magazine added the charge that she had used 'emotion-fanning words.' Her credibility as a scientist was attacked as well: opponents financed the production of propaganda that supposedly refuted her work. It was all part of an intense, well-financed negative campaign, not against a political candidate but against a book and its author*" (1994). Interestingly enough the *Time Magazine* that lead a

bitter attack against Carson put her as one of the 100 most influential persons in the 20th centuryⁱⁱ. Chemical companies like Monsanto, Velsicol, American Cyanamid and others began a campaign against the book as soon as it was in production. Those even organized pamphlets against her.ⁱⁱⁱ Carson's argument was that chemical industry was misleading public and government officials with false reports on the effects of pesticides. Instead, she considered that those pesticides should be labeled as biocides because they did not target correctly pests. She was a real scientist and considered knowing as a basic element to survive and harmonize humanity with nature. Now this is a common sense reflection. But Carson's effort was to show how this knowledge on chemicals and technical actions should be taken into account. She was claiming for producing a new knowledge that was obliterated. Remember that the chemist creating DDT got the Noble Prize and many of the available pesticides came from the military industry developed during the Second World War.

In the second chapter of *Silent Spring*, Carson quotes this sentence by the French biologist Jean Rostand: "The obligation to endure gives us the right to know." In our opinion this sentence frames correctly what this paper is about: knowledge is a need in order to survive. That is the right to know beyond pleasure or entertainment, to say, what scientific popularization tries to offer in many cases. Science and technology become not an amateur hobby but a question of citizenship.^{iv} Just the opposite, our own survival requires us to know and let others know as well. Knowledge is therefore a question of *concerned* knowledge. This is the reason why Carson employs not only scientific data well contrasted and used- but also literary elements. What is at stake is bigger than particular cases, is, according to her "*a war between human being and nature.*" It is clear that, in the last extent, is a war against the human being itself and it is required to meet in terms with nature if we want to survive. Her goal is to make attractive and well communicated that knowledge. Emotions take a substantial part in that concerned knowledge but this part does not imply sentimentalism or good feelings. It goes beyond those questions.

Interestingly enough, Carson had to suffer what have become topics against activism on science and technology. First as we said, was against her scientific credibility. Secondly as a woman questions about feelings and emotions (hysteric position) but as a speaker belonging to Cyanid Corporation pointed out, Carson's proposal would bring humanity back to the Dark Ages. Scientific credibility and pursue of progress will become the motto against criticism arising from civil society. Carson did not deny any use of chemical pesticides. She proposed a basic principle of precaution; we do not know enough about those substances and the risk is too high. So what we need is more information. Carson's legacy was the need to get more knowledge in order to prevent disasters. Ecology movements have taken this proposal. Now contemporary ecology groups like Greenpeace devote a great effort to acquire that knowledge. Laboratories to analyze water, air, chemicals and other environment elements are part of many Ecology associations. Generating knowledge is a way to obtain that right to know in a society where is extremely difficult to trust in corporations even government agencies.

Carson was one of the first experts to notice that conflict of interests: the same agency (USDA) that regulated the use of pesticides was in charge of protecting wild life. The EPA (Environment Protection Agency) as a separate organism was one of Carson's ideas. Also conflict of interests has grown as Peter Barnes shows: chemical corporations hire former officials in the area of environment (Barnes, 2006: 99-100). The purpose is to solve interest conflicts using the knowhow of the "other side." In this sense it is easy to understand the growing distrust towards government agencies.

Cryptography and Civil Society

The second case we would like to consider is cryptography. Cryptography is a special area inside Number Theory. Its military applications are obvious and interestingly enough, its development also helped computer industry. Experiences from World War II led to a very restrictive and censored attitude towards cryptography. As Steven Levy (2001) pointed out,

secrecy around cryptography was extraordinary. Papers on that subject were censored and speakers were not allowed to share their findings. For instance Levy recalls how Claude Shannon's contributions were under secrecy as late as the Sixties, two decades after being made. Also agencies like the National Security Agency were in the hide because its task was the control of cryptography. The question was simple; cryptography belonged to the government so no civil effort could be allowed. For three decades and having all kind of difficulties, Whitfield Diffie was able to develop a new cryptographic protocol known as the Diffie-Lehman protocol.⁹ Diffie found himself in difficulties many times because his work touched a key stone in censorship: national security. He received pressures from government to not make available his system. But spreading his work led to one of the most fascinating results in Internet technology: PGP, Pretty Good Privacy.

Philip Zimmerman developed Pretty Good Privacy that was a landmark for private use although right now is not of common use. Meanwhile the government deployed a vast array of counter-measures such as the Clipper Chip—a way of controlling digital communications—legal anti-terrorist laws and many other systems of surveillance and control. The fight was clear: control over communication—that is privacy—should be only in one side, the government, and civil society should keep transparent. Zimmerman was sued for deploying PGP and accused of “exporting weapons to enemy.” Prosecution lasted three years.

Zimmerman very soon had the support of different Internet groups like the Electronic Frontier Foundation (they awarded Zimmerman with a Prize in the middle of prosecution). Pages like this summarized what was going on: *“But law enforcement and intelligence officials have a different view of Zimmermann’s achievement. He is being investigated for possible violation of federal arms-export laws because his ‘cryptography for the masses’ has slipped out of America. ‘The ability of just about everybody to encrypt their messages is rapidly outrunning our ability to decode them,’ worries a U.S. intelligence official. ‘It’s a lot harder to eavesdrop on a worldwide web than it is to tap a cable.’ Echoes James Kallstrom, assistant director in*

charge of the FBI's New York office: We need balanced public policy because it has unbelievable ramifications for business and law enforcement” (Lessig, 1999: 35-36).

According to Lawrence Lessig, *“No other technological discovery—from nuclear weapons (I hope) to the Internet—will have a more significant impact on social and political life. Cryptography will change everything”* (Lessig, 1999: 36). Lessig’s statement can be a little bit exaggerated but also corresponds to that spirit of secrecy that the US government showed during Clinton’s mandate. Also e-government, e-commerce and many other Internet services require cryptography. Also Lessig states that, *“Cryptography can be [many] things, both good and bad, because encryption can serve two fundamentally different ends. In its ‘confidentiality’ function it can be ‘used to keep communications secret.’ In its ‘identification’ function it can be ‘used to provide forgery-proof digital identities.’ It thus enables freedom from regulation (as it enhances confidentiality), but it can also enable regulation (as it enhances identification)”^{vi}*. The issue at stake is a basic political right.

As Lessig points out, private cryptography is a basic technological tool needed for democracy; it is required for privacy and intimacy in an era where communications go mainly electronic. Balance of power requires both sides government and civil society. Diffie and Zimmerman were able to develop a technology *against* the government policy. Reasons to oppose those developments were basically the Real-Politik of a world threatened by terrorism. Somehow the cryptographic movement made theirs this famous statement by Jefferson *“The man who would choose security over freedom deserves neither.”* Diffie and Zimmerman’s movement supposed the birth of a complete Internet movement called cypherpunk during the nineties. This group offered technical and political questions to discuss. Basic idea was that individuals need protection in the era of the Internet beyond companies and governments. In fact companies have taken advantage against users with cryptography like cybercash or DRM systems.

Substantial Equivalence and the Right to Suspect

Modern biotechnology has got a great success with modified genetic traits. Patenting has become a lucrative source for biotechnological business. But food implies other aspects apart from nourishing. Cultural diversity, traditions, social ties, among other questions, conform a complex network in food and eating beyond pure scientific or objective approaches. Insects are a good source for proteins but it is difficult to convince some cultures of the convenience of eating them. Also food considered as “delicatessen,” oysters for instance, can be extremely disgusting for different peoples. So how something is considered sure or convenient to eat depends on different questions deeply embedded in cultural and societal facts. There is a fuzzy sense of risk about food that all of us have experienced sometimes. What is safe? What can be eaten without a sense of danger? Behind of our appreciation there is a long tradition, education and experience that cannot be neglected. It is too easy leave solutions to experts especially with that growing sense of partiality, of being influenced by other elements like economy and profit.

Genetically modified organisms have been under suspicion from the very beginning. The European Community found a strong resistance among citizens to authorize the introduction of such food. This differs with EEUU where 70% of GM food of the world is produced. Substantial equivalence was a proposal to try to solve that feeling of risk among citizens. Any food has nutrient and anti-nutrient components; anti-nutrients are eliminated through cooking or manipulating food. Or it can be that the amount of anti-nutrient is not too high to be a risk. That happens with very common food as tomatoes and potatoes, for instance. So the procedure consists into comparing chemical properties of a modified organism with what can be considered as “natural,” a regular crop although it is true that artificial selection through centuries makes difficult to define natural. Anyway that was a standard used to try to avoid risks.

The following is a definition about what is supposed to be the substantial equivalence: “To

date, the safety assessment of genetically engineered and novel foods has been based on the principle that these products can be compared with traditional foods that have an established history of safe use. Furthermore, this comparison can be based on an examination of the same risk factors (i.e., hazards) that have been established for the traditional counterpart.” The first time the term was used was in the beginning of the 1983. The OECD (2000) published a report on that issue trying to define and put in motion such a protocol to avoid misinformation. It is important to underline the goal pursued by the OECD: substantial equivalence was a means to cope with uncertainty and a way to allow free trade on genetic modified organisms. So it was technological expertise devoted to corporations, a way to introduce GM organisms in a quick way into markets.

The question here is how to evaluate that risk. Substantial equivalence has been under attack almost from the time it was formulated. From being a conclusive test has been redefined as a needed but preliminary step complemented with many other tests. This goes directly against corporations because implies a delay on commercializing products and requires more expenses in further tests. But the question can be defined quite easily. Effects of GM organisms are in the border of what scientific community knows. Research progressively clarifies that shadowed zone and controversies arise not only from industry and consumers but also among scientists themselves. Scientists belong to society and can be in the side of corporations or consumers. One relevant case is the Pusztai controversy.

Arpad Pusztai (Rowett Institute) was appointed as a researcher on the effects that modified potatoes could produce in health. His study concluded that rats fed with GM food presented a significant reduction of their immune system. That was exactly the opposite result he was appointed to achieve. But Pusztai decided blow the whistle and his paper was accepted in the prestigious medical journal *The Lancet* (Ewen, Stanley and Pusztai, 1999: 1353). Richard Horton, director of *Lancet* denounced pressures from the Royal Society not to publish that paper (Randerson, 2008). The paper finally appeared in 1999 and immediately was under

attack by the Royal Society; the famous institution appointed six independent members to analyze the results concluding “*lack of evidence, bad methodology and miscarried experiments.*” Rumors held that Rowett Institute was partly financed by Monsanto, the company producer of GM potatoes. But the controversy spread and reached general public. Major newspapers published that controversy including *the Guardian* (Randerson, 2008). Of course this have effects on a technology whose risk assessment requirements have no implication with NGOs. As a result there has been an ongoing campaign against GM organisms from diverse points of view.

Ecology organizations like Greenpeace or various consumers associations have claimed the need to apply a cautionary principle on these GM substances. There are three different attitudes:

- a) those who consider GM organisms as something harmless so it should be marketed as soon as substantial equivalence is demonstrated.
- b) those who consider the need to explore further and the right to know and want to apply a cautionary principle, using further tests to make sure about the harmless of that GM organism
- c) those who consider GM organisms as pollutants^{vii} that affect seriously not only human health but also environment.

Probably the second possibility is the most interesting one. There is a potential on GM organisms that can be used for the good and a world’s growing population demands GM technology to avoid hunger. But that is not incompatible with the need of more knowledge and the citizen’s right to demand and create such knowledge, the right to act in a prudential way. What is dangerous is let corporations use knowledge for mere profit independently of risks.

The Right to Know and the Right to be Known: Electro Sensitivity

Contemporary medicine has experienced an unusual growth diagnosing new illnesses and new

syndromes. Suspicions are that pharmaceutical companies are promoting such growth with the aim to make profit. That seems clear in the growing array of mental diseases where the massive use of medicines is prescribed, especially anti-depressants. In this context, a group of people appeared by the end of the last century demanding attention about illnesses not identified in medicine books like the electro sensitivity. According to these people, their illness can be defined as a sort of allergy to electro-magnetic fields. Devices causing these fields are, among others computers or microwave ovens, cell phone masts or electric grid stations placed inside cities. The question posed was if it is possible to show a *real* connection between electromagnetic fields and different symptoms caused by them. If that connection was set it would allow affected people to declare their illness and obtain benefit from public health care or protection from insurance companies. People affected by this allergy tried to call attention from general public and specialists in order to know.

A group in Sweden organized their own NGO, the FEB or the Swedish Association for the Electro-Sensitive in 1994 and compiled a document with more than 350 cases testifying about the illness and their experience. That book *Black on White, Voices and Witnesses about Electro-Hypersensitivity* (Grandung-Ling and Ling 2004) is a group of testimonies of those affected with no further analysis. Some media covered that issue like *the Independent* indicating that some forms of child cancer, miscarriages and suicides could be caused by that *electric smog*. It is hard to live far from electric fields in our societies. So these people lived and suffered ignored until the last six years. The World Health Organization acknowledged the existence of that affected people and gave the technical name for that disease: electro-sensitivity that was accepted internationally. There is such a thing as electro-smog, and it is a fact. The WHO (2005) even states that ES is one of the most common and fastest growing environmental influences and could be considered as a human carcinogen.

EMFacts,^{viii} the blog on ES gives an idea of the scope of this problem. About 3-5% of population suffers ES. So without being too pessimistic there are about 13 million persons only

in Europe. Sweden, the first government accepting ES as a work illness there is about 250.000. Germany has signed preventive measures known as the Freiburger Appeal (2002). By the end of 2005, United Kingdom through the Health Protection Agency (HPA) accepted the existence of many people suffering symptoms probably due to electromagnetic radiation. “Probably due” is a formula that tries to satisfy everybody but does not. Concerned people consider not being fully recognized and experts manifest to be overwhelmed by public pressures. What is going on is something similar to other cases: for some there are enough scientific evidence but for others believe any step in favor a risk for the complete democratic system. Being allergic to modern style of life threatens the basis of that modern society. Electric fields keep on growing every day.

The *British Medical Report, Definition, Epidemiology and management of Electrical Sensitivity* (HPA, 2005) accept the existence of affected citizens as patients suffering ES. But the report picks words with extreme care. Its aim is to assess that problem but it also claims the use of the term ES does not imply the acceptance of a causal chain among symptoms and exposure. Also it says that there is not consistent scientific evidence yet. And it goes on stating the need to consider ES in different parameters than etiological terms because with traditional parameters there is no way to connect the needs of people suffering ES. This has an interesting corollary: ES is a problem that cannot be qualified if scientific approach is excluded.

Therefore this is a dead end unless the cognitive value given by experience would give a solution. If doctors cannot draw a model of illness able to be generalized this does not imply to disdain personal experiences or put that illness under the generic label of “mental disease.” If differential tests, diagnosis protocols, clinical routines and therapeutic practices do not work a further step should be taken. Sick bodies of those affected people are singular. It is true the existence of some recurrent symptoms such as migraine, tiredness, insomnia, facial ardor, itching). But what makes those patients different is a peculiar set of symptoms unable to be reduced to stable rules. Doctors do not know how to diagnose, many times because health

institutions do not agree in the existence of ES as a typified illness. In exchange they listen to the report of a person that knows his or her body and knows what is going on. Also he or she knows from when and why that happens. It is possible that each day we find different and new problems like electro-sensitivity, impossible to tackle with reductionist procedures. Each body works as a very subtle and complex sensor regulated by a large number of variables impossible to regulate.

This complexity leads to a less linear or predictable behavior as modern science uses to be. Maybe we could confront this issue from a different point of view. There is an idea built up by modern science but at the same time there is an emergent notion expressed by experts in experience who report. The first one is technically objective, the second does not appear through machines able to measure or qualify that nature: this one is basically subjective. This alternative gives way for multi-naturalism. That illness cannot be simulated reduced to a bunch of parameters following a law or even a mere statistical law. But patients can be gathered. When that happens they are allowed and are recognized as a group of concerned people. If science cannot give a name that means they do not exist as scientific object (there are not under a typified pathology). There is not a scientific consensus but they are still citizens. There is no scientific consensus but concerned people mobilized to build a different scientific consensus. So they generated new knowledge in a very intimate way, through the suffering of their bodies.

Right to Know what Concerned People Want: The Case of Nuclear Public Discussions

In 2008, at the beginning of the financial apocalypses one key discussion was where to look for new energetic resources. The oil demand (approaching according to some experts to the “oil peak”) and high prices began to put into the table the need to re-launch the nuclear program. United Kingdom government, after a long time paralyzing any new project decided to begin again. This put into discussion many actors because fight against nuclear power is one

of the big successes in environmental movements. It was interesting how people like James Lovelock, father of the Gaia theory defended such option. Also Patrick Moore, co-founder of Greenpeace rectified a position against nuclear power sustained for 30 years. Something was moving very fast and the threat of an economy catastrophe put some good chance to reopen the old debate. But, given the former experience with cases like Chernobyl, Harrisburg and so, it was necessary to present things in a different way. So decision was wrapped as an inevitable political choice, scientifically sound and supported in a right democratic way.

The main argument is taken from people like Lovelock and Moore: energy is causing the global climate change—the CO₂ emissions—so it is necessary a diversification of energy sources including nuclear. It is suspicious to find people that previously did not believe in the global climate change and now use that argument to promote nuclear power. Also old operative energetic systems are a part of the problem because it is necessary to guarantee energetic supply. As a result there is the need of high level of consumption and at the same time the need of low cost production. And the British government tried a different approach. Decision to reopen the nuclear program was preceded in United Kingdom by a poll (2006).

That survey tried to calibrate public opinion about that issue. The government tried to make things correctly so instead of choosing a representative sample of citizens answering questions, there was chosen representative individuals belonging to concerned groups (companies, unions, citizen organizations). Information was provided, different groups were summoned in various cities, public debate was organized for a span of time long enough in order to achieve a through months, an adequate opinion. When that survey finished the government declared that citizens supported nuclear program according to statistics but was not the truth.

Some activists groups like Greenpeace or Friends of the Earth, members of the Green Alliance, objected lack of transparency during the process and accused the government of manipulating public opinion. The process spoiled one of the most hopeful methods of dialogue

between government and the public. In fact the NGOs involved in that survey sued the government and the judge Justice Sullivan declared in favor of the plaintiffs. The government had to repeat that process of consultation and had to avoid bias and hidden facts introduced by the government. Judge Sullivan even declared that these kinds of surveys were not a privilege or a cession by the government but a citizen right. Activists went further and claimed a waste of time, the discredit of the government, crises among experts, sabotage of the consultation devices, bad practices and a defeat for democracy. In the last extent, those groups accused the government of having a hidden agenda and the aim to organize a pantomime to get legitimacy for decisions already taken. Survey was repeated with a protocol according to the BBC, partially improved but equally disputed.

According to the people watching that survey, December 8 2007 was a key date. In that day nine workshops were held in nine different towns and the results confirmed a 43 % of assistants agreeing with in favor of nuclear fission. There were about 1100 people belonging to groups and associations involved in that issue. A 37 % rejected nuclear power and 18% were in doubt. In places like Newcastle the NO reached a 41%, two points below Yes. Results at Newcastle show a rate of opposition to nuclear power higher than the European rate (see “Energy Technologies: Knowledge, Perception, Measures” (Euro-barometer special issue, January 2007). But results legitimized the government and January 10 manifested the decision to nuclearize the country.

There was not more time left if campaign against the global warming had sense and, at the same time, if UK would still be an international power. Not everybody agreed. Environmental groups created the Nuclear Consultation Working Group to examine ways to proceed and scrutinize arguments used by the government. Those involved in this issue agree that British choice is crucial especially if the German alternative (opposed to nuclear power and in favor of green power sources because of the global climate change) would not succeed. Criticisms against Gordon Brown’s energetic policy is not a merely tactics but a strategic a move. Many

countries will follow the same path, according to Nuclear Spin, if resistance is weak or inconsistent.

A group of concerned people entered the arena of controversy. NCW Group composed by distinguished members of English scholars and at the same time activists, began that year with a quite impressive report, *the Nuclear Consultation; Public Trust in Government*. This report gives abundant information about hidden facts and misleading arguments used by the government. The reason for those misfits, according to NCW was to coerce a public agreement closer to electric companies' interests than to scientific objectivity and clarity. Facts cannot be hidden. For instance there is the basic fact that only a 4% of CO₂ emissions would be reduced thanks to nuclear power. Also the argument that says only nuclear power can keep energetic bill at bay and secure energetic UK independence lacks further argumentation. Other alternate energies would be implemented also but in a surprisingly low percentage and with no much assurance or speed. These delays make plausible the hypothesis indicating how the nuclear option was taken beforehand. Advanced economies are extremely dependent on petrol. Last years have shown how fragile become those economies and how the future is compromised for this model of no sustainable development. But trying to solve greenhouse effect with nuclear power plants equals to a technological mega-fix, according to Jonathon Porritt (Chief for the Sustainable Development Commission dependant of UK government.) To solve the extreme dependence of cheap energy with more nuclear power is like trying to fix a drug addict with brain prosthesis. It equals to trust blindly into the techno new independently of any other possibility.

Documents given by the government do not say much about other questions *The Report Nuclear Consultation. Public Trust in Government*, tries to clarify them. First it says nothing about real costs for a nuclear power plant. Building and utilizing a power plant requires always many more resources than the previously calculated; these calculations are always deeply underestimated. Also the argument about not having enough sun energy neglects biomass and

wind as other alternatives. Lack of serious studies about how to take advantage from these sources is in stark contrast with the easiness speaking about radioactive residues and the possible run out of uranium deposits. Even more, there was nothing about possible accidents, security, efficiency, eventual catastrophes or terrorism. Competent experts are supposed to analyze all these aspects but there is little discussion about how results appear, how these are obtained, and these variables used for them and in general the impact of those in the decision that government chooses. This is an important point because variables that confront and qualify nuclear option inside the energetic system (that is, all available energetic sources) must be carefully chosen taken into account technical reasons, of course, but also economy, political and ethical factors.

Scientist for Global Responsibility's report tries to go along those lines: to show many uncertainties on the nuclear option and the other ask for more relevance in factors usually neglected. When poorly representative committees take decisions, when uncertainties such as residuals are hidden, when nobody wants to point the plutonium and its military applications, when green energy is considered as the banner for radical activists or techno-fobes, then the government behaves displaying a clear failure on international and intergenerational responsibility. International responsibility states the need of not make deeper problems for others when one solves its. Intergenerational responsibility demands to avoid future conflicts or irresolvable tensions.

Conclusion

What we have tried to show is how citizens organize themselves in certain issues concerning science and technology. "Concerned" is the criteria that allows such organizations, the criteria to articulate them. And science becomes one of the most important issues from a political point of view. What is disputed is basically power and control or how to achieve power through control. Alliance among experts and laypersons is a basic requirement in order to play this

political game. Lack of knowledge puts out of game to those who do not have it. There are exceptions. Carson shows how experts can be attacked even having expertise. Cryptography shows how experts can rebel against control and try to avoid the dangers of government pressure through disseminating knowledge, which is, recruiting lay users. Interests of companies can be limited, like the case of substantial equivalence through the alliance of experts and public opinion. Electro-sensitivity is a good example where people make experts to listen to them. And finally the nuclear controversy shows how concerned experts; out of the lobbying system can convey arguments in favor of public concern. All the cases show a similar structure: the controversy is a way to limit, consider and rethink present or future human needs.

Also what they have in common is the need to develop and pursue scientific and technical knowledge. Some of these concerned people have made contributions like new technological devices or new insights on medicine. It is not a question in opposing science and technology, it is a question to understand, limit and decide how it should work, what decisions should we accept in this moment with this or that development and also being aware than our actions have effect for our neighbors and for future generations. So spread a production of knowledge becomes a citizen's task among others. This is because these issues go in something common to all of us: body, environment, privacy and health. All of those belong to the new commons that we share and have duties on it, political duties. So, the citizen's response tries to establish a third element between government and corporations, between state and market.

Bibliography

Barnes, Peter. 2006. *Capitalism 3.0*. San Francisco: Berret Koheler.

Carson, Rachel. 1989. *The Sea around Us*. Oxford: Oxford Univ. Press.

Diffie, Will. 1988. "First Teen Years of Public Cryptography"; *Proceedings of the IEE*, Vol.

76. N 5.

- Ewen, Stanloey and Pusztai Arpad. 1999. Effect of diets containing genetically modified potatoes expressing *Galanthus nival* is lectin on rat small intestine. *The Lancet* Vol. 354, 1353.
- Gore, Al. 1994. "Foreword" to *Silent Spring* by Rachel Carson. Harcourt: Houghton Mifflin. Available at <http://clinton2.nara.gov/WH/EOP/OVP/24hours/carson.html>
- Gray, John. 2002. *Straw Dogs. Thoughts on Humans and Other Animals*. New York: Granta Books.
- Lafuente, Antonio. 2007. *El Carnaval de la tecnociencia*. Madrid: Nadir.
- Lessig, Lawrence. 1999. *Code and Other Laws of Cyberspace*. New York: Basic Books.
- Levidow, Les, Murphy, Joseph, and Carr, Susan. 2007. "Recasting Substantial Equivalence: Transatlantic Governance of GM Food" in *Science, Technology and Human Values*, n 32.
- Levy, Steven. 2001. *How the Code Rebels Beat the Government Saving Privacy in the Digital Age*. Albany: Penguin.
- Maldonado, Tomás. 1997. *Critica de la Ragione Informatica*, Milano: Feltrinelli.
- OCDE Agricultural Policies in OECD Countries: Monitoring and Evaluation 2000: Glossary of Agricultural Policy Terms. Available at <http://stats.oecd.org/glossary/detail.asp?ID=2604> (accessed August 12, 2009).
- Randerson, James (2008) Arpad Pusztai: Biological divide. The scientist at the centre of a storm over GM foods 10 years ago tells James Randerson he is unrepentant. *The Guardian*. January 15. Available at <http://www.guardian.co.uk/education/2008/jan/15/academicexperts.highereducationprofile> (accessed August 12, 2009).
- Shattuck, Roger. 1996. *Forbidden Knowledge, From Prometheus to Pornography*. New York: Saint Martin Press.
- Grandung-Ling Rigmor and Ling John. (2004) *Black on White, Voices and Witnesses about Electro-Hypersensitivity*. Available at <http://www.feb.se/feb/blackonwhite-complete->

book.pdf (accessed August 15, 2009).

World Health Organization. 2005. "Electromagnetic fields and public health." Available at <http://www.who.int/mediacentre/factsheets/fs296/en/index.html> (accessed August 15, 2009)

Igumed. 2002. "Freiburger Appeal." Available at <http://www.feb.se/NEWS/Appell-021019-englisch.pdf> (accessed August 15, 2009).

Monsanto. 1962. "The Desolate Year"; *Monsanto Magazine*, October. Available at <http://www1.umn.edu/ships/pesticides/library/monsanto1962.pdf> (accessed august 15, 2009).

<http://omega.twoday.net/stories/1115204/>

<http://www.tetrawatch.net/links/links.php?id=nolink> <http://www.emfacts.com/weblog/?p=435>
<http://www.mastsanity.org/doctors-appeals.html>

- i Banning a technology or field of study is a complicated issue. Pugwash's aim was to avoid chemical and biological warfare, learning the lesson that nuclear war gave. But there is therapeutical cloning that can be extremely useful for treating different diseases like cancer, Alzheimer and others.
- ii Peter Matthiessen considers her among the 100 most influential persons for the 20th century in *Time Magazine*, 1999.
- iii See for instance "The Desolate Year"; Monsanto Magazine, October 1962, pgs 4-9. This article tries to counter argument the XI Chapter, "A Fable For Tomorrow" where Carson depicts a world void of life, including human lives because of chemicals. Maybe this fable is the most known part of her work because of its impressive imaginary.
- iv See Lafuente (2007)
- v For a comprehensive technical summary on Diffie's work see Diffie, 1988.
- vi Lessig, Lawrence (1999) *Code and Other Laws of Cyberspace*. Basic Books; New York. Pp. 35-36.
- vii For a complete and very clarifying study on how substantial equivalence see Levidow, Les, Murphy, Joseph, Carr, Susan, (2007) "Recasting Substantial Equivalence": Transatlantic Governance of GM Food" in *Science, Technology and Human Values*, n 32 (1).
- viii <http://www.emfacts.com/weblog/?p=435>