"Όποιος θέλει να ζήσει πρέπει να μιλήσει τώρα"

"Whoever Wants to Live Must Speak Up Now":

The Rhetorical Struggle of the Greek anti-G.M. Movement

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As this is not a Oscar ceremony, I would like to wrap it up by dedicating this dissertation to Lee Kyoung Hae, the Korean *campesino* who committed suicide on a barricade in Cancun, Mexico (2003) showing all over the world that neo-liberalism is insupportable and also to Via Campesina and everyone worldwide fighting for food autonomy and sovereignty.

Abstract:

This thesis is concerned with the rhetoric of the Greek anti-GM social movement. In the research, documents from web-sites concerned with, and coming from the Greek struggle against G.M.Os were systematically collected, namely from the websites of Greenpeace and the Pan-Hellenic Movement against Genetically Modified Organisms. What is compelling in the Greek case is the outright governmental ban on all G.M.O. releases after a massive media outcry, in a country where, according to recent Eurobarometers, the knowledge about the effects of biotechnology and genetic engineering is very low and there is little or no debate prior to the introduction of new technologies. In fact, pursuing an in-depth, critical discourse analysis of the documents, what I prefer to call 'hermeneutics of suspicion', I have come up with certain rhetorical techniques of the Greek anti-G.M. movement. In general, these techniques consisted of the establishment of shared categories, of terms such as the "mutants", when refering to G.M.Os; "genetic engineering" being established as contingent when being applied to crops and hopeful, when applied to medicine. Moreover, the framing of oppositional subjects, of an "us and them" war, was another discursive feature, as well as the amputation of stake to the subject of "them", the multinational lobby of biotechnological corporations. Finally, the side of "us", the opponents of G.M.Os was identified with the whole of the citizens of Greece, instead of an activist group, and called to articulate an *anti-logos*, a counter-argument. The overall analysis suggested that the Greek anti-G.M. movement was incremental in the widespread opposition to G.M.Os, through establishing shared definitions, via the effective popularization of scientific terms by the Greek anti-G.M. movement, through the conscientization of the citizens, via the discursive identification of sides and the amputation of profit-driven interest to the proponents of G.M.Os.

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"The understanding and acceptance of any science or technology including food biotechnology can change dramatically depending on the language used"
Asian Food Information Centre, quoted in Cook, 2004

Introduction

The study of social movements (e.g. environmentalism, feminism, lgbt movements) is a blossoming field in social sciences (Diani, 2003; Della Porta & Diani, 1999; Melucci, 1996) since many researchers and academics grow aware of the injustices harbored in neo-liberalism. The investigation of social movements has historically been performed by people who are usually engaged or agree with their goals while some were even members of the movement they studied. I chose to attempt a discourse analysis of the Greek anti-G.M. movement drawing on van Dijk's (1993: 249) directions on critical discourse study: 'focusing on the role of discourse in the [(re)production and] challenge of dominance'. I was interested in this discourse that challenges dominance, in the language that can "change dramatically the understanding and acceptance", or refusal of G.M.Os and biotechnology. I chose this field of inquiry fully aware that the method employed fell under the criticism of Bourdieu (2003) for 'campus radicalism', i.e. eschewing the engagement with social struggles in favor of self-referential activities, such as textual analysis. To defend my case, I believed that the struggle against the introduction of G.M.Os in Greece was deeply rooted in rhetoric and explaining, thus a critical discourse analysis would have been an appropriate method to explore the discursive strategies used. Most of all, it is what Bakhtin termed 'clash of accents' (Gardiner, 1992), namely that modern society is marked by a plethora of antagonistic discursive forms, where the words are always sites of struggle between multiple and intersecting meanings, that reflect wider social

conflicts, in a 'struggle over the sign'. So, the focus on this rhetorical struggle of a social movement along with my engagement with it, permit the allegation that this discourse analysis occurs in what Routledge (1996) calls 'Third Space' between academia and activism, in the space of critical solidarity and committed investigation, imagining social change.

The Greek anti-G.M. movement, in its 'struggle over the signs', is part of a contemporary social movement, which gained European momentum demanding a ban on the import and cultivation of G.M. crops, clear labeling and more knowledge of what foods the Europeans consume. In most E.U. countries, including Greece, it has been fairly successful, pressuring the governments in multiple ways. Since a social movement only through an in-depth and over-time ethnography can be explored fully, the lack of time and the physical distance prevented me from attempting it. So, I opted for a discourse analysis of texts that were published online, by the two major groups of the movement, Greenpeace - the Greek branch of the worldwide environmental organisation - and the Pan-Hellenic Movement Against Genetically Modified Organisms (Πανελλήνια Κίνηση Ενάντια στους Γενετικά Τροποποιημένους Οργανισμούς). I decided to focus on the Greek strand of the anti-G.M. movement, bearing in mind my participation in it (which ensured background knowledge and initial knowledge of the “field”). To sum up, this thesis aims to explore and analyse the rhetoric of Greenpeace and the Pan-Hellenic Movement, while looking at their differences in strategies and pondering on their accomplishments.

In the literature review, three areas will be overviewed eclectically, in order to situate

this project in a tradition of research. The first area dealt with is the study of environmental social movements, providing a wide introduction to the field and mostly focusing on research about the anti-G.M. social movement. The second area concerns the methods to be used, namely the theory and ideas of discourse analysis with a critical perspective, what Norman Fairclough (1995) and Teun van Dijk (1993) name critical discourse analysis. The third area overviewed will concern selected studies addressing particularly discourse and genetics, i.e. studies employing analytical interpretative methods to study qualitatively the area of genetics-related issues.

The research design of a qualitative project is considered to be a more intuitive venture than a quantitative, being more open-ended and free-flowing. In the second chapter I will debate the epistemological paradigm in which the design and the methods are situated. Furthermore, there will be a presentation of the research design and the methods used, applying the steps for discourse analytical research Potter and Wetherell (1987) described.

The third chapter is the core of the thesis containing the analysis of the discursive features of the Greek anti-G.M. movement. It is structured in a dialectical way, juxtaposing the analysis of four documents, two from each group. The extracts used formed a rationale exploring certain themes. My main focus will be on the efforts to articulate a rhetorical *anti-logos,* a counter-argument, which will oppose the discourse of the other side. This insistence on sides, on the inter-group conflict between "us and them", "us" being the anti-G.M. movement and consequently, the Greek public, while

"they" are the advocates of G.M.Os, is another theme explored. The *anti-logos* will be based also on the words used, hence there will be an in-depth analysis for the rhetorical preference of central words in the G.M. debate, like "mutants" ("μεταλλαγμένα") and "genetic engineering" ("γενετική μηχανική"). In the word preference theme central are the descriptions and categorizations attributed to each word, which are using a particular language and simple-to-understand vocabulary, making scientific concepts easily digestible to laypersons.

The final part of the thesis is the discussion and conclusion. It is meant to tidy up the findings and the interpretations, drawing them all together and finding common patterns. In effect, the word preference and the vocabulary used is one such common resource, as it seems to have influenced the members of the Greek public in adopting the terminology and in general, being hostile to G.M.Os. Furthermore, I will take the step to suggest that there was, at least to some extent, a victory in the 'clash of accents', as the rhetoric of the anti-G.M. movement became popular and acceptable in Greece, as the terminology was popularized and the opponent, the side of "them", discredited.

Chapter One: Literature Review

1.1: The Environmental Movement in Western Europe.

From the 1960s onwards, social movements, protest actions and more generally, political organizations without alliances to major political parties or trade unions, have become a permanent component of western democracies. Social movements are described as informal interaction networks, espousing shared beliefs and solidarity, engaging in collective action and conflicts, using protest methods. In order to speak of social movements it is necessary that single episodes are perceived as components of longer-lasting action, conveying a world vision and a collective identity, rather than discreet events (Della Porta & Diani, 1999).

In the '60s, the green movement started to blossom, as the industrialized countries faced many environmental problems: nuclear energy, toxic waste, acid rain and lack of resources (Dalton, 1993). The writings of key thinkers of the ecological movement mobilized a lot of people, particularly the *Silent Spring* by Rachel Carson (1962). The World Wildlife Fund (W.W.F.[1]) begun, in 1961 in Britain and a bit later in the rest of the Europe (Boardman, 1981). The anti-nuclear movement was essentially vibrant, in the whole Europe, leading to the creation of Green parliamentary parties, like Die Grünen in the Western Germany, the Green Party in U.K. and Les Verts[2] in France (Rootes, 1995). Another important ecological group of the post-war period is the Friends of the Earth (FoE)[3], whose members conducted more politicized campaigns, and spectacular direct action protests. Greenpeace[4], founded in Canada in the start of the '70s, became iconic for their tactics of spectacular direct action to draw attention

[1]The British website can be found at: http://www.wwf.org.uk/core/index.asp
[2]The Web sites for these parties can be found, in their respective language, at: http://www.gruene.de/index.htm, http://www.greenparty.org.uk/news, http://lesverts.fr/ .
[3]The British website for FoE can be found at: http://www.foe.co.uk/.
[4]The website concerning the U.K. Campaign can be found at: http://www.greenpeace.org.uk/.

to their critique of environmental crisis and nuclear arms race (Dalton, 1993).

In the last decades, three newer environmental issues have sprung up: animal rights, anti-roads campaign and biotechnology. The animal rights movement was linked to the rise of ethical vegetarianism and food risks like the BSE crisis. It used direct action campaigns and sabotage to laboratories conducting experiments on animals. New groups emerged, with more anarchic structures, like the Animal Liberation Front[5]. The anti-roads movement acts against the construction of roads and airports to make transports faster, while destroying wild lands, reserves and marginalized, deprived neighborhoods. It also advocates direct action and autonomous groups, like Earth First![6] (Wall, 1999). The concerns over G.M. plants and genetic engineering alerted many activists and mostly, the European consuming public, while many *ad hoc* groups were formed: Genetics Engineering Network[7], Genewatch[8] in the U.K., A-Seed[9] in the Netherlands. The international N.G.Os, like Greenpeace and FoE also followed on this issue.

1.2: The Anti-G.M. Movement

The books and papers on the acceptance of biotechnology and genetic modification technology are growing by the day, but the side of the opponents only very recently has come under inquiry, thus the books and papers on this subject are very few. To introduce this review, I have summarized the arguments against G.M., as elicited by

[5]The U.S. web site for ALF is: http://animalliberationfront.us/index.html.
[6]The British web site can be found at: http://www.earthfirst.org.uk/.
[7]The website is: http://www.geneticsaction.org.uk/
[8]The website can be found at: http://www.genewatch.org/.
[9]The European website (multilingual) can be found at: http://www.aseed.net/.

the public in the U.K. government's debate, conducted by the GM Nation Steering Board (2003), recommended by the Agriculture and Environment Biotechnology Commission (AEBC). They were reported, first of all, the risk of contamination of non G.M. plants and organisms, the right for freedom of consumer choice between non-G.M. and G.M. food and the principle of precaution for novel technologies. Other arguments stressed the lack of reliable, independent scientific evidence to remove doubts, which are based on previous health disasters, like the BSE, foot-and-mouth disease, SARS, etc. The opponents also pointed out that G.M. crops don't offer any benefits for U.K., on the contrary, they could be a threat to the environment, the wildlife and biodiversity. The unknown risks of G.M. food to human health were cited, as well as the ownership of the technology by multinational companies, whose power, profits and motives are objectionable. There were also moral arguments, based on religion, and breaking the laws of nature. Finally, the opponents of G.M. in the debate were generally far more against trans-species applications than other participants.

Another important project was conducted by Hviid Nielsen et al. (2002). Based on survey data from the Euro-barometers, they suggest that there is a pattern in the respondents' differences on the European skepticism about G.M. technologies . They propose that the pessimists, the opponents of biotechnology can be split into two groups, one 'green' more modernist, traditionally to the left, and one 'blue', on the conservative side, oriented towards the preservation of nature and its resources. I won't cite the differences between countries in this study, just mention that it is shown that Catholic nations have more 'blue' skeptics while Protestant nations more 'green',

and both groups contain more women and high levels of rural residence. Both groups share the assumption that modern biotechnology will reduce our quality of life. The 'blue' group is convicted that technological intervention on nature is a priori unacceptable, while the 'green' points to the uncertainties and risks related to biotechnology. It seems that the 'blue' arguments are supported by religious and moral values and the 'green' by notions of uncertainty and risk. To phrase it in metaphors, the 'blue' critique is more Faustian, as biotechnology can be conceived as a covenant with Mephistopheles, whereas the 'green' is more 'Frankesteinian', concerning the insufficient knowledge of potential consequences (Hviid Nielsen et al., 2002).

In the same perspective of binary descriptions, Plein (1990, 1991) classifies the opposition to biotechnology in two categories of groups: the 'conditional opponents', including agricultural groups, concerned scientists, environmental groups and public interest groups, who participate intermittently on an issue-by-issue basis, and the 'absolute opponents', who contest every issue. The latter tend to use more confrontational tactics of litigation, publicity campaigns and public demonstrations, while the former tend to prefer political compromise and negotiation.

One of the few papers I managed to spot on the internet, was by Rein de Wilde, in the website of the European Association for the Study of Science and Technology[10] (de Wilde, 2004). The author criticizes the styles of reasoning Greenpeace use in the handling of science. He mentions that Greenpeace promotes itself as a science-driven group, although their efforts are towards the prevention of testing the potential risks

[10]The article can be found at: http://www.easst.net/review/march2004/dewilde.

posed by G.M. crops on a case-by-case basis. He calls the Greenpeace style of reasoning 'categorical' after its central claim that there is a categorical difference between genetic and non-genetic modification of crops, while not allowing contextual, case-by-case, investigation of these differences, thus alienating scientists.

Brian Tokar (2001) edited an authoritative activist (and research) tome regarding the worldwide resistance to genetic engineering. Among many texts, he chronicles the rise of the anti-G.M. protests, legal action and activism, in parallel with the scientific advances after 1975. Jim Thomas (2001) describes the 'playful world' of the U.K. genetic resistance, documenting the direct action activism, the grassroots activists' organization and the festivals of resistance, the parades, the "Super Heroes against Genetics", the crop destruction by local groups, even the odd cricket match using G.M. potatoes. Vandana Shiva (2001) reports on the Indian peasants' popular struggle against Trade Related Intellectual Property rights (TRIPS) and their fight to evict Monsanto and its crops off India. Thomas Schweiger, a lobbyist for Greenpeace, in order to explain the moratorium on G.M.Os by the European Parliament[11], offers eight insightful hypotheses on why Europeans abhor them. His first guess is that Europeans don't like their food to be tampered with. The second is that they have learned that too much "technology" and industry in your food is a serious threat to your health, while they understand that their eating habits can have a positive impact on nature conservation. The European consumers also cherish the labels on their food, since it is a long standing right to be able to make an informed choice, which biotech industry was perceived to be trying to take away. The sixth hypothesis is that G.M.Os

[11]Decided by the European Parliament on the 25/06/1999.

were seen as an American invention and American companies were taken as trying to meddle with European values and cultures, something unacceptable. Furthermore, Europeans have a critical mind and do not easily trust “sound science” and technological advancement. They prefer to be on the safe side, as sound science and technology are not gods in Europe. Finally, Schweiger suggests that Europeans instinctively feel that GM food is dangerous and provides no benefits. In another chapter, Steve Emmot (2001) chronicles the ten-year N.G.O campaign against the European Patent Directive, while Lucy Charratt the ten years of rural Canada's resistance to the Bovine Growth Hormone.

Derrick Purdue published a seminal tome, documenting, from a perspective of environmental science, the emergence of the anti-GM movement (2000). He suggests that global hegemonic projects, like the World Trade Organization or the G.A.T.T. play through the institutions of global governance, like the United Nations or the E.U., by taking the form of discourse coalitions, like the expert systems of intellectual property rights. These projects mobilize various actors, like the Ministries of Agriculture, which promote special interests, i.e. the marketing of G.M. crops, as global food necessities. The N.G.Os and the activist groups, on the opposite side, build counter-expert networks in order to strip the legitimacy of the hegemonic expert systems, to break up the public’s theoretical dependency on a single expert source by emphasizing the uncertainty and the contingency of the experts. The activists also build solidarity, by sharing information, seeds and direct actions, by organizing global networks outside the state, by connecting electronically. Thus, they construct the movement as an autonomous actor in a global social field, contesting global

hegemony. The action led by the N.G.Os established nodes of civil society around state-centric global institutions and negotiations. In effect, Purdue (2000: 143) suggests that the anti-G.M. movement has 'challenged the hegemonic project of global patenting both in the negotiation of regimes within international law and by contributing to the development of a global civil society'.

1.3: Discourse Analysis and Critique: Hermeneutics of Suspicion

Discourse analysis can be defined as a 'set of methods and theories for investigating language in use and language in social contexts' (Wetherell et al., 2001: i). It focuses on the categorizing, performative, and rhetorical features of texts and talk (Potter & Wetherell, 1987; Potter, 1996). As mentioned in the introduction, van Dijk (1993: 249) asks for an explicit sociopolitical stance of discourse analysts, in the study and critique of social inequality 'focusing on the (re)production and challenge of dominance'. Dominance is defined as 'the exercise of social power by elites, institutions or groups, that results in social inequality, including political, cultural, class, ethnic, racial and gender inequality (ibid. p. 250). Suitable data for analysis, examining how language legitimates social control, include interviews, documents, textbooks, media texts and media broadcasts.

Van Dijk states that the critical understanding of issues in their context 'presupposes more general insights, and sometimes indirect and more general analyses of fundamental causes, conditions and effects of such issues (1993: 253). Hence, critical discourse analysis requires 'true multidisciplinarity and an account of intricate relationships between text, talk, social cognition, power, society and culture' (ibid.).

That is why, instead of 'critical discourse analysis' I prefer Paul Ricoeur's description of 'hermeneutics of suspicion' (1970). According to the philosopher (1970: 33), hermeneutics of suspicion is 'a method of interpretation which assumes that the literal or surface-level meaning of a text is an effort to conceal the political interests which are served by the text. The purpose of interpretation is to strip off the concealment, unmasking those interests'. This method places critical discourse analysis in the intellectual tradition of hermeneutics, starting with the interpretation of ancient Greek and roman philosophy, medieval theology, the humanities and lately cultural studies, in the tradition of the masters of hermeneutics of suspicion, of Freud, Marx and Nietzsche. It incorporates the insights, the intuition, the hunches and the specialist knowledge, the quirkiness and the scholarship (Billig, 1988) of a discourse analyst.

1.4.: Discourse and Genetics

In this sector of the literature review I plan to overview parts of the literature applying discourse analytic methods to texts concerning genetic engineering, the genome and biotechnology in general. One of the older papers is by Kleinman & Kloppenburg (1991). They undertake a study of discursive products developed by Monsanto Corporation[12] to show how these texts take the promulgation of a particular view towards biotechnology. They suggest that Monsanto draws on four sets of discursive elements in order to protect its interests in the area of genetic engineering: technological determinism, scientific expertise, the nature of nature and the hegemony of the free market. A central discursive element in the company's promotional campaign is a view of technology as autonomous of human affairs, not subject to

[12]The leading agro-food, pesticides and chemicals biotechnology company.

human intervention and always beneficent (Kleinman & Kloppenburg, 1991: 432). So, any opposition to biotechnology is seen as the result of ignorance. In the U.S.A. there is the ideology of scientific expertise, once any public intervention into science is considered unacceptable. Only experts are seen as competent to make decisions on scientific development. The third discursive element found is the allegation that biotechnology is a *natural* science, that genetic alteration is a "natural event" in evolution. The company avoids any reference to mutation, as 'it is a controversial word, associated with popular notions of mutants as irregular and imperfect' (Kleinman & Kloppenburg, 1991: 437). Finally, the hegemony of the free market is associated with the national interest of the U.S., as the interests of Monsanto are presented as interwoven with the interests of the U.S.A.

In another paper, Plein (1991) examines how the image of biotechnology in the U.S. has been transformed from one of danger and uncertainty to one of opportunity and familiarity. He aims to explore the methods portraying biotechnology in positive terms in public and policy-making circles. He identifies the building of a coalition of biotechnological companies articulating a single voice. There are also the alliances with established and private interests, like federal agencies, the agricultural ministries, etc. He suggests also the association of biotechnology with economic development and international competition, popular issues on the policy agenda. Last method is the portrayal of opponents of biotechnology as 'extremists out-of-step with time, or, in more charitable moments, as well-intentioned but mistaken' (Plein, 1991: 482).

Nerlich, Dingwall and Clarke, in a series of articles (2000, 2001, 2002, 2003) explore various properties of the discourse on genetics. In a 2000 article, they investigate the

use of stock characters, such as Frankenstein's monster, as metaphors in the discourse about cloning, and of word-play, i.e. changing familiar terms, like book or film titles, idioms and sayings in the discourse about G.M. plants. They propose that in the absence of well-known images or scenarios regarding G.M. plants, media writers usually modified familiar idioms and sayings to get their message across to the reader. Examples are: *reap what you saw, seeds of disaster, seeds of dissent* (Nerlich, Clarke & Dingwall, 2000). In another article, they trace the literary foundations on which the cloning debate has been depicted, such as science fiction themes, scripts, and metaphors, like the most popular *Brave New World* (Nerlich, Clarke & Dingwall, 2001). In a paper from 2002, they unfold the metaphors, images, literary and cultural references used in the announcement of the Human Genome project (26/06/2000) by B. Clinton and T. Blair, in order to steer the discourse towards public euphoria. "Learning the language in which God created life", the genetic code as map (or book) metaphor are such devices put into play. In the latest article, Nerlich and Clarke (2003) focus in the media event about the cloning debate of 2001, to find out the interpretive packages and the uses of such controversies. They conclude that such events can focus the attention of the media on a single issue, e.g. the cloning of humans, while they may provide scientists with an opportunity to publicize, promote and popularize genetic advances, thus helping in the public understanding of genetics. They can also accelerate policy changes by exposing scientific, legal and ethical uncertainties (Nerlich & Clarke, 2003).

McCann-Mortimer et al. (2004) examine texts and talk associated with the scientific legitimacy of the concept 'race', looking for ways in which constructions of truth are

worked up in scientific discourse. They identify the use of the empiricist repertoire and the truth-will-out-device (Gilbert & Mulkay, 1984) in order to accord legitimacy to the scientists' allegations on the concept of 'race', as well as quantifications and contrasts, used to construct the superiority of science to lay understanding. But they conclude that despite the promissory representation of the human genome project as having produced scientific evidence to discredit the biological legitimacy of 'race', the concept is likely to persist in both popular and scientific usage.

Yamaguchi & Harris (2004) investigate the framings of Indian social actors regarding the Bt cotton discourse in India. They have found five conceptual frames of agro-food biotechnology discourse: governance, society, science and technology, economy and ecology. Their conclusion is that economy issues hegemonized the discourse, by displacing the other frames. In another article, O'Mahony and Schäfer (2005) compare the media coverage of genome research in Ireland and Germany and identify four discourse coalitions[13]: the economic rationality coalition, the scientific progress coalition, the counter-scientific coalition and the fundamental critique coalition. However, the German coverage is more extensive and elaborate than the Irish, due to the national pattern of interests, Germany's participation in genomics' research projects and the country's traditions of media coverage, as it resonates with the public.

Cook, Pieri and Robbins (2004) have studied the views of G.M. scientists, to see their argumentation strategies and language use. They found out that the scientists tend to distinguish themselves from the public and the opponents of G.M. technologies, as

[13]Discourse coalitions are defined by Hajer (1995) as typical discursive syndromes that combine actors and arguments, culturally structured networks of communication.

well as to attribute only to themselves the knowledge of the 'scientific method'. They characterize the public disquiet over G.M. as irrational and superficial, not based on scientific expertise. Last, but not least, the opposition to G.M. is seen as 'emanating from self-interested individuals and organizations acting upon a malleable and passive public, rather than from the public' (Cook, Pieri & Robbins, 2004: 440). Overall, scientists seem to think that decisions over G.M. should be taken over issues of risk and safety only. In another article in *Discourse and Society*, Calsamiglia and van Dijk (2004) discuss the articles of the Spanish press that are popularizing the human genome research. Apart from defining the various techniques used in the popularization, they concluded that the recontextualization of scientific knowledge in popularization discourse and its transformation into everyday, commonsense knowledge, combines precise knowledge with fuzzy or approximate knowledge, metaphors and schematic categories.

Guy Cook is the author of *Genetically Modified Language* (2004), a book which critically analyses the war of words waged by those arguing for GM crops. Cook critically investigates the language, the argumentation and the metaphors deployed by major players in the GM debate - by politicians, journalists, scientists and corporations. The findings are in line with his previously cited paper (Cook, Pieri & Robbins, 2004), but they also discuss the rhetorical choice posed by scientists regarding genetic engineering, that society should choose between enlightenment and irrational fundamentalism, as if there is no middle ground. Furthermore, Cook studies the word choice in the G.M. debate and points the 'hooray words' and key phrases, such as 'improved', 'sound science', 'Frankenstein foods', or interfering with nature'.

Finally, I will cite his conclusion on the acceptance of biotechnology by the public: “The face dialogue of the campaign for G.M., and the assumption that its recipients will be persuaded, unsuccessfully attempt to deny what is happening. Language, like nature, is being used in an unnatural and unsuccessful way. A cause for optimism is that those without vested interests in G.M. technology remain critical of both G.M. and the language used to promote it” (Cook, 2004: 131).

Chapter Two: Methodology

2.1: The Paradigm

Discourse analysis is a method that is informed by several disciplines, such as social psychology, anthropology, linguistics, communication studies, sociology, etc. This is its strength and its weakness, as it is criticized of lacking the robustness and empiricism of the natural sciences. But the qualitative inquiry has developed different epistemological principles and research strategies than the quantitative, mostly due to discontent with the positivism of the latter. In the literature review, I suggested that I prefer the title 'hermeneutics of suspicion' as a description of my analytical method. This description is following the interpretative epistemological paradigm, that stresses the differences between the subjects of social sciences' inquiry and the subjects of the natural sciences, asking for a different logic of investigation (Bryman, 2004). As a paradigm of social research, it respects the differences between people and requires from the social scientist to grasp, to understand their subjective meaning of social action. Its intellectual roots come from the notion of *Verstehen,* from phenomenology and hermeneutics, lately from symbolic interactionism (Bryman, 2004). But qualitative methodologies differ also in their ontological assumptions. In line with the

interpretive stance, the ontological position of constructionism is assuming that language, descriptions and meanings construct the world, or at least versions of the world (Potter, 1996). 'Reality enters into human practices by way of the categories and descriptions that are part of those practices. The world is not readily categorized by God or nature in ways that are all forced to accept. It is *constituted* in one way or another as people talk it, write it and argue it' (Potter, 1996: 98).

The question though , usually asked by critical realists (eg. Bhaskar, 1989) is how can a social reality of dominance and inequality change, if it is assumed to be merely a construction of socially shared meanings, not rooted in empirical reality. Even though this is a long-standing controversy in the social sciences, I believe the focus of 'hermeneutics of suspicion' to actively 'strip off the concealment', unmasking those political interests behind the surface of a text, the critical engagement of a researcher in the 'Third Space' (Routledge, 1996), the critique and challenge of domination are able arguments for the change of social reality.

2.2: Research Focus and Methodology

The interdisciplinary nature of discourse analysis can be problematic, when having to present the methodological framework used in the analysis of the data. But it is also wanted, if the epistemology is hermeneutical. As suggested earlier, the overall research focus of this dissertation is to examine texts from two (maybe the bigger) groups of the Greek anti-G.M. movement, Greenpeace and the Pan-Hellenic Movement against G.M.Os., in order to find out their rhetorical strategies in articulating an opposition to the introduction of G.M.Os in Greece. To present the

methodology, I will draw on the first five of Potter and Wetherell's (1987) ten steps for the methodology of a discourse analysis. The research question was, broadly, centered on how the discourse of the two groups of the anti-G.M. movement was put together, and on the functions it served on delivering oppositional arguments. The documents were freely available online, at the websites of the two groups[14], and I collected systematically every document available, referring to the anti-G.M. campaign, to form a corpus of data. All of Scott's (1990) criteria for document quality were satisfied, as the documents were authentic, coming from known websites, they were credible for the same reason, they were representative of others in the web-sites and meaningful, clear and comprehensible. Potter and Wetherell (1987) suggest a stage of intermission, a break from the inquiry, but in my case a stage of translation should come first, as all the documents were in the Greek language. I undertook the task, and then circulated the drafts to friends, in order to verify their linguistic competence. The stages of intermission was a necessary part of the process, as I was able to determine which texts to focus on analytically. There is a split between critical discourse analysis and discourse analysis, as to the place of prior theoretical (and political) assumptions in the stage of analysis and coding. In this case, the theoretically-driven inferences definitely influenced the analysis, but I tried to focus primarily on the rhetoric of the social movement, and then build theoretical interpretations.

Chapter Three: Analysis and Discursive Features

[14]The website of Greenpeace in Greece is http://www.greenpeace.org/greece/ , while of the pan-hellenic movement is: http://www.nogmos.gr/ . Consulted on the 1/08/05.

3.1: Introduction

The first document under analysis is a text of Greenpeace from May 2004, entitled “Frequently Asked Questions about Mutants” ("Συχνές Ερωτήσεις για τα Μεταλλαγμένα"). Of course, Greenpeace, as a global environmental organization, would not campaign about mutant people and other Science Fiction stories. On the contrary, this is the popular term in Greece for what the rest of the Europe and the world refers to as G.M.Os, or Genetically Modified Organisms. The use of such terms by the protagonists, like “mutant(s) (organisms)” and “genetic engineering” has been the first part of my analysis. In another part, I have tried to analyze the accounts of science and technology in the texts' rhetoric, in other words their use of the contingent and the empiricist scientific repertoires (Gilbert & Mulkay, 1984), in order to see their framings of efficient or “good” science and uncertain, inefficient or “bad” science. To a slightly lesser extent, I use the distinction between the 'green' and the 'red' (Bauer, 2002) applications of genetic engineering, as framed in the rhetoric under analysis. This is relevant to the previous point of scientific repertoires, as the 'green' applications are considered “undesirable” in the texts and revolve around agro-food biotechnology, while the 'red' ones are termed “desirable”, being related with biomedical applications. It is noteworthy that this distinction was first found in the quality press of the U.K. (Bauer, 2002) and it has, apparently, influenced the rhetoric of Greenpeace.

But, let me get back on the text, which is structured in an interrogative format, in thirteen questions and answers. As Cook (2004) notes, this style is 'the perfect

antidote to arrogance' (p. 21). These rhetorical questions, being more like subjects of discussion and preludes to Greenpeace's allegations against G.M.Os are rhetorically constructed in order to present a solid argument throughout and avoid the usual criticisms of didacticism, lack of communicative intent and tedious opposition based on lengthy speeches or documents. This format of presentation is presented as 'less combative, less *macho* than constant declaratives' (Cook, 2004: 23).

The G.M. debate worldwide has been a war of words (Cook, 2004), with each side having a strategy of argumentation to dominate in the warfield of the public sphere[15]. As I noted earlier, the general choice of the word "mutants", like the title of the text "Frequently Asked Questions about Mutants" has been a discursive accomplishment of the opponents' side, to frame the dispute in favorable terms. Because in Greek, the word "mutants" ("μεταλλαγμένα") is considered as outright negative, implying an accidental modification, "a living thing with an unusual and frightening appearance because of a change in its genetic structure[16]". In essence, this is a value judgment on the products of genetic engineering, an instance of conscious word choice. This is the point Cook (2004) makes on the opposite case of the U.K., where the debate has been revolving around the G.M. technology initials, as there has been a shift of terms from "genetic engineering" to "genetic modification" or most commonly "G.M." In Greece, the choice of words of the opponents of G.M. has prevailed in the common language, as documented mostly in the media, for instance in the article of a daily for

[15]In fact, this is a metaphor used in another document.
[16]http://www1.oup.co.uk/elt/oald/bin/oald2.pl Oxford Advanced Learner's Dictionary, consulted on the 07/06/2005.

"20 million tons of mutants imported every year in the E.U." (Eleytherotypia, 3/06/05). What is also interesting is that probably, this choice of words is deliberate, as Cook (2004: 86) mentions that Greenpeace 'seeks to identify words and phrases with positive and negative impacts through focus groups'.

3.1.1a: The Choice of Words: "Mutants" (" Μεταλλαγμένα")

> Extract 1:
> *Greenpeace is against the release in the environment of organisms which are products of genetic engineering, as well as to the privatization of life through exclusive patent rights on living organisms, genes or parts of the genome. Genetically mutant (or genetically modified) organisms were released to the environment without there being any previous or adequate knowledge concerning their effect on the ecosystem, the wild nature and the human health*[17].

Before even starting, the header of the document is indicative of the preferred term. Entitling a document "Frequently Asked Questions about Mutants" sets "mutants" ("μεταλλαγμένα") as the preferred term for the debate and the rest of the text, according to Greenpeace. This preference is to be explained in the first question, entitled "what is Greenpeace's perspective on genetic engineering", setting it before the term "genetically modified" and presenting the latter in brackets, as an alternative of the former, using the disjunctive "or". It is noteworthy that the word "mutant" ("μεταλλαγμένος") is presented as the preferred word in this context, by putting the two terms next to each other and alternating just the contested term of "modified" ("γενετικά τροποποιημένος") with "mutant" ("μεταλλαγμένος"). Moreover, it is set as

[17]All the extracts in their original form in the Greek language are in the Appendix, as well as the full original documents and their English translations.

the preferred term by Greenpeace in the structure of the paragraph, and of the argument: in the previous sentence, there is only a general reference that frames the organization's view on genetic engineering, namely "organisms which are products of genetic engineering". So, there is the implicit definition of "mutants" as "organisms which are products of genetic engineering" setting not only the term preference but an explicit and favorable choice of words to frame the debate and Greenpeace's view on it.

> Extract 2:
> *Genetically mutant organisms are **new life forms** that didn't exist beforehand in nature, and, which, in contrast with the traditional forms of biotechnology and plant production, break the natural barriers created between species through millions of years of evolution. **Thus, a fish and a strawberry would never intersect in nature,** but genetic engineering succeeds that in the lab. Scientists extract a gene of a fish and implant it in a strawberry creating a completely new organism. Genetic engineering has the capacity to use genes of animals, plants, even of humans.*
> *When these organisms, which are made by human hands, are released on the environment and the food chain, then they start to reproduce themselves. It is an **irreversible procedure**, that if and when it starts, there is no way to be intercepted. Nobody knows what could be the long-term consequences of the release of genetically mutant organisms in the environment.*
> *(EMPHASIS AS IN THE ORIGINAL TEXT)*

In this rather long extract, which is part of the second question[18], we have another description of mutant organisms. They are explicitly categorized as "new life forms", using bold fonts, for the first time in the document, to emphasize the description that "they didn't exist beforehand in nature". Answering the question, mutant organisms are contrasted with traditional forms of biotechnology, in order to maximize (Edwards & Potter, 1992) the rhetorical significance of their refutation as novel life forms,

[18] Under the title of "What is genetic engineering? Are genetically mutant organisms dangerous? Why isn't genetic engineering similar with the traditional biotechnological techniques for the plant's improvement?".

which break the “natural barriers”. Their description as such is very interesting, because it accords them a status of life forms, but not the usual (and implicitly acceptable) life form of organisms, like the bacteria, the viruses, or the bigger plants, animals, and humans. Rather, they are ontologically excluded from the “natural” species, with the further statement of breaking the natural barriers “created through million of years of evolution”, adding a bit of temporality, of Darwinian evolution theory. Thus, they are actively constructed as novel life forms in a showcase of 'ontological gerrymandering' (Potter, 1996: 177), in order to be distinguished from the “natural” and “acceptable” life forms.

The exemplification of the above, in the next sentence, in bold fonts again (to establish a connection with the previous ones), serves to explain the ontological exception of the “natural” species, in giving a case that is a *hubris* against commonsense logic: the intersection of a fish and a strawberry. The agent of change is asserted here: it is “genetic engineering”, a technology that takes place in labs, away from the “nature”. Afterwards, the agency of “scientists” in genetic engineering, a human intervention, is stated, explaining how a fish and a strawberry are intersected and further stressing that they are creating a “completely new organism”, as if taking a god-like status.

In the next paragraph, Greenpeace takes to construct a story of “Frankenstein foods”.

This popular reference against G.M. foods was initially coined by Daily Mail[19] and then became a catch phrase, a leading environmental metaphor (Harré et al., 1999) used by both proponents and opponents (Cook, 2004). Just like Mary Shelley's novel Frankenstein, G.M. foods are accused of provoking irrevocable damage and harm to humans, of reproducing, of not being stoppable. This is also the story presented here, using an easily digestible scientific discourse, in order to attain credibility of its claims. So, we have a remembering of agency, who creates those organisms ("made by human hands"), referring to the scientists, to stress again the human intervention in a simple and sentimental way, and then the claim is unfolded. There is use of a temporal and causal syntax ("when") and of two verbs ("released", "reproduce") that can summarize a story of dangerous spreading, reproducing and causing harm, plunging in and out of scientific and everyday vocabulary. Of course, Greenpeace emphasizes the environment and the food chain, as these are the fields of their interest. Then, there is the description of the story as an "irreversible procedure", to document the human inability to alter the situation, once the harm is done, when the monster is out and about.

The final sentence is also stating the human inability and uncertainty, in an explicit way, making an extreme case formulation (Pomerantz, 1986): "nobody knows". The story of unknown, uncertain and unstoppable harm is constructed to describe the Frankenstein or the mutant foods[20] as a metaphor, by the use of passive voice structures (Fairclough, 1995), thus specifying no actors, by the bold letters and the

[19]On the 28 January 1999.

[20]It is interesting that while in Greece the terms "mutant foods" or organisms have prevailed as the everyday term referring to G.M.Os, in the U.K. the metaphor of Frankenstein is dominant, even though the term 'mutant crops' was also introduced by a British daily, the *Express*, just 3 weeks after the 'Frankenstein Foods', on the 18 of February 1999 (Cook, 2004).

emphasis on the "irreversible procedure" and mostly by the generalizing, no-details language, which lies between the scientific and the lay discourse – words like "intersect", "reproduce" are closer to the scientific language, while "released"[21] and "creating" are closer to layperson's talk – and helps in the popularization of the claims (Calsamiglia & van Dijk, 2004), explaining simply difficult-to-grasp scientific procedures.

3.1.1b: The Choice of Words: "Genetic engineering" ("Γενετική μηχανική")

Genetic engineering is handled by Greenpeace as an ambivalent and uncertain technology, which should be handled with caution. The description and definition of genetic engineering is given in the second question, in Extract 3:

> *Extract 3:*
> *Genetic engineering deals with the extraction of selected genes from an organism (like an animal, a plant, a bacterium or/and viruses), or the composition of copies, and their artificial insertion into other organisms, completely different (like the cultivated plants). These new organisms get some new characteristics, like the resistance to a particular weed-killer. Genetic engineering usually uses genes of viruses for the infiltration and the advancement of the foreign genes, as well as genes of resistance to antibiotics, which function as sign genes. The introduced genes are present in every cell of the plant.*

In cleverly chosen words, on the verge of scientific discourse Greenpeace stresses the artificial nature of genetic engineering. There is the description of the "extraction" and the "insertion" of the genes, as well as the emphasis on the other organisms, categorized as "completely different". There is no mention of an agent applying

[21]The original word in Greek for "released" is "απελευθερωθούν" which literally means "liberated", a very strong sentimental expression.

genetic engineering. Surely, an extraction of a gene doesn't happen by itself. Many examples are also used, specifying the organisms (“like the...”), the new characteristics (“like the resistance...”). This 'scientistic language' (Harré et al., 1999: 51) serves to popularize what genetic engineering is, through avid examples, easy-to-understand words and the lack of referencing characterizing the 'genre' of scientific texts. The definition of scientism by Rom Harré and his colleagues is 'the use of a scientific vocabulary outside its usual area of application', a 'bona fide science' which borrows the voice of authority of science (Harré et al. 1999: 51). In effect, terms like “extraction”, “artificial insertion”, “infiltration”, “sign genes” serve to communicate and popularize the views of Greenpeace. The rhetorical aim of this extract is this explicit association of genetic engineering with the insertion of genes to “new organisms” and with “new characteristics”, since this is the account that legitimizes the metaphor of mutant organisms and the category of mutant organisms as such. In the first sentence of Extract 1, Greenpeace states its perspective against genetic engineering, concerning the release of mutant organisms in the environment. The organization is against genetic engineering, concerning only the environment, as it is made clear in a following extract:

> *Extract 4:*
> *It must be mentioned though, that Greenpeace is not against the limited use of organisms which are products of genetic engineering, as for medical purposes, in a controlled, bounded environment. Furthermore, Greenpeace believes that the genetic engineering can be a useful tool for the understanding of the function of natural mechanisms, a necessary knowledge on the advancement of organic farming.*

This is not a clear refutation of all genetic engineering, it is rather a device of stake inoculation (Potter, 1996), a way to manage the accusations of being anti-medicine,

anti-science... biased. It is their 'axe to grind' (Potter, 1996: 124). Given the nature of the text and the voicing, Greenpeace could be accused of denoting all genetic engineering, as a technology, like other ecological groups do, an accusation that would render incredible their claims. So, they articulate an argument that clarifies their stance, distinguishing between the environmental genetic engineering, which produces mutant crops, as mentioned in the first extract, and the medical applications of genetic engineering, which are acceptable in a "controlled, bounded environment", for safety.

3.1.2: The Repertoires: Empiricist and Contingent

Nigel Gilbert and Michael Mulkay (1984) have described the empiricist and contingent repertoires of scientific action in their seminal tome on scientists' accounts. They maintained that in the formal scientific contexts of an experimental research paper, the 'accounts are couched in terms of an empiricist representation of scientific action' (p. 40). This repertoire is characterized by the impersonal style, 'while the overt references to the actions, choices and judgments of their authors are being kept at a minimum' (p.42). In the same time, there exists an alternate scientific repertoire, the contingent, which usually is found in informal contexts, like interviews and informal discussions. The contingent repertoire is characterized by more emphasis on opposing scientific perspectives, on the personal characteristics, and there is space for debate. I will try to show that these repertoires are embedded in the distinction Greenpeace advocates between environmental and medical biotechnology, as featured in the previous extract, categorizing the former as contingent and uncertain and the

latter as empiricist, safe and promising for the future.

> *Extract 5:*
> *The possibility that certain mutant plants could be dangerous for the health is something that can't be excluded. The arbitrary implanting of foreign genes could potentially cause problems to the controlled DNA network of an organism. The foreign gene could, for instance, cause changes to the chemical reactions inside the cells or obstruct the normal cellular function. This could lead onto instability of the implanted genes, to the appearance of new allergies, of toxic effects and onto changes of the nutritional value of the organism.*

In this extract, which is part of the question: "Is it true that mutant corpses are dangerous for the health?" there is nothing stated as certain. The contingent words are following one another: "possibility", "could be", "can't be excluded", "arbitrary", "potentially" and so many others. The sole answer to the question is the uncertainty. The specification of the subject as the mutant plants conveys that the extract is exactly about the agricultural applications of genetic engineering. The scientistic language is continued, with expressions like the "controlled DNA network", "obstruct the normal cellular function", etc. But this language is not used in the formal scientific way, asserting findings and impersonally describing procedures, instead the scientific words are decontextualized in order to convey in the text the uncertainty and the health hazards attributed to genetic engineering of G.M.Os.

On the other side, the procedures of medical biotechnology are characterized as different from the environmental. This distinction is further exemplified in an extract found in the final questions of the document, where Greenpeace engages in stake management (Potter, 1996):

Extract 6:
Greenpeace is specialized in environmental issues and has focused its attention to the dangers concerning the release of genetically mutant organisms in the environment.
The use of genetic engineering in medicine differs from its use in agriculture and aquaculture where there is widespread release to the environment of mutant organisms. In contrast to farming applications, in medicine the use of mutant organisms is controlled (in space and time) and it is done with the consent of the interested person (e.g. the patient). In the medical field, genetic engineering is used for the creation of new medicine and the application of new testing methods. This use of genetic engineering is normally not associated with the use of genetically mutant organisms and their release to the environment.

This stake management, similar to extract 4, is rhetorically organized to make their allegations against G.M agriculture credible and trustworthy, emanating from a reasonable N.G.O. which communicates using scientifically-founded language. That is why there is the precise distinction between medical and agricultural genetic engineering, where the former is escorted with the empiricist repertoire, characterized as controlled, consensual and potentially beneficiary for humans. Of course, all this is done in an easy-to-understand language, lying between the scientific and the everyday language, in line with the purpose of the document, to communicate Greenpeace's arguments and popularize their views on the contested issues. Overall, this distinction is the essence of the Green – Red distinction, that Martin Bauer (2002) proposed, based on findings from media studies, distinguishing between a good, empiricist and acceptable medical biotechnology (red) and a bad, contingent and "unacceptable" environmental agro-biotechnology (green). Greenpeace explicitly rejects the contingent strand of G.M. technology, while accepting the medical genetic engineering.

3.2: Introduction to the Second Document

The next text under analysis is a document from the *Pan-Hellenic Movement against Genetically Modified Organisms*. This is a grassroots-based group representing many trade unions, farmers' unions, environmental and citizens' groups all over Greece campaigning against the introduction and release of G.M.Os. Once again, I will focus on the use of the words "mutant(s)" ("μεταλλαγμένα") as the preferred term, in the headlines of the text in the first extract, and also in the accounts of science and technology. What is new here is the construction of the opponents as a subject and the explicit statement of their agency, something largely missing from the text of Greenpeace. This text is also explaining and describing the terms of G.M.Os and "mutants" ("μεταλλαγμένα").

3.2.1: The Choice of Words: Mutants (" μεταλλαγμένα")

It is noteworthy that there is a reversal of the term preference indicated by Greenpeace. Even from the name of the group, there is preference for the full name of G.M.Os (γενετικά τροποποιημένοι οργανισμοί), as in "*Pan-Hellenic Movement against Genetically Modified Organisms",* instead of "mutants" ("μεταλλαγμένα"). To indicate the term preference, I will focus on the headlines and the titles, given in their proper order, font and emphasis:

> *Extract 7:*
> *Genetically modified organisms (mutants)*
>
> *What are the mutants*
>
> ***Mutants = incalculable risk***
> *For the natural Habitat*
> *For the Public Health*
>
> *THE RELEASED MUTANT GENES CANNOT BE WITHDRAWN NOR INTERCEPTED BUT THEY REPRODUCE*

THE CIVIL SOCIETY HAS THE RIGHT TO SPEAK AND NOT THE MULTINATIONAL "SCIENCE"

In the first headline of the document, we can see that "genetically modified organisms" is stated as the preferred term, instead of "mutants", which is set in brackets. Quite the contrary than Greenpeace. This rhetorical preference is used as a claim of the "objective" legitimacy of the text, using a scientific and uncontested term and simultaneously introducing as the alternative the "mutants", a contested and negatively connotated term, but "familiar" in the member's resources (Fairclough, 2001) of the Greek society. This is evident as the next headline, from the first paragraph, is using the "mutants" term, suggesting the existence of a semantic difference between the two. Thus, the term preference is shifted and the ideologically charged term is set as the preferred one, in order to describe and categorize the organisms, using the ontological gerrymandering Potter (1996) describes.

The third important headline is heavily emphasized in the text, with bold fonts. It is the equation and description of mutants as "incalculable risk". The use of the word "mutants", in fact in an explicit equation with risk, is rhetorically constructing its meaning as dangerous, suggesting also the use of contingent repertoire (Gilbert & Mulkay, 1984), that this risk cannot be calculated, it is unknown. In this headline, the words "genetically modified organisms" are missing, indicating the term preference again. Of course, in the text omitted follows the documentation of this claim, which is based on the consequences of the release of G.M.Os in the natural habitat and the public health.

The other headline, written in capital letters, is further documenting the magnitude of the risk posed by the mutants, in an affirmative, authoritative form. It is like a warning shout-out of the consequences, stating what the future would be once the mutant organisms are released. It is structured rhetorically around an antithetical conjunction ("but") of two negative verbs ("not withdrawn, not intercepted") with a positive one ("reproduce"). Hence, the positive verb, normally associated positively with (human) reproduction and fertility, gets to carry negative connotations of dire future and inevitable disaster, if there is a release of mutant organisms, it gets all the rhetorical emphasis as a warning, or a prediction. The words used "mutant genes" suggest that the shift of term preference to the charged term, but more familiar to Greek citizens.

3.2.2: The Subject Positions of "Us and Them"

In the last headline cited, which, in Greek, is more like a rhyming motto and a culmination of the document, there is a vocal element: "has the right to speak". This phrase in Greek implies metaphorically a turn-taking, a change of speaker in a dialogue. That's where the movement is rhetorically orienting: to articulate a discursive popular opposition to G.M.Os, an *anti-logos,* juxtaposing civil society's critique to a controversial "multinational science". In fact, it uses a Hegelian notion of *civil society*, common in the environmental literature, as an arena wherein people pursue their particular private interests in common, independent from and in fact prior to, the state (Wapner, 1996). Naturally, this critique will revolve around science as a practice, but more so, it will concentrate on the agency of multinational companies of biotechnology. Hence, the text rhetorically identifies the anti-GM movement with

"civil society"[22] in the last title analyzed, constructing an ideological subject (Althusser, 1971; Hollway, 1984) against "them", the multinational corporations, establishing an "us and them" inter-group conflict, a shared anti-GM social identity (Tajfel, Billig, Bundy & Flament, 1971). Let's not forget that this is a slogan culminating a document.

In effect, the position of "them", the multinationals, has been already suggested and developed from the beginning of the text, under the headline of "What are the Mutants":

> *Extract 8:*
> *The mutants are products of the companies of Genetic Engineering. In their laboratories, they intervene and modify on will, the genetic material (DNA) of the living organisms using particular techniques.*

In this initial description of the qualities of the "mutant organisms", they are explicitly categorized as products of companies of "Genetic Engineering". This ontological gerrymandering (Potter, 1996), which I also suggested previously, is organized rhetorically so as to specify and associate the G.M.Os with the companies producing them, creating the subject position of "them", the opposition. Moreover, the "mutants" are described as artificial "products", not natural, made in "their laboratories", using "particular techniques", a discursive practice that Greenpeace is also using. The pronouns used, "their" and "they", are further subjectifying, suggesting the companies as a whole, as persons, not as organizations of directors, workers, scientists, marketeers, etc. This idea brings to mind Bakan's (2004) idea that in late capitalism, corporations have attained the status and rights of corporality and

[22]This identification, as well as the parts of civil society, will be better demonstrated in a later extract.

personhood, idea that was popularized in the film *The Corporation.* The use of the metaphor "on will" contributes to the *anthropomorphism* of companies according them the psychological will to do things. Hence, a complete subject is rhetorically constructed as an opposition to the Anti-G.M. movement. Moreover, we see that genetic engineering ("Γενετική Μηχανική") is written in capital first letters , as if implying an exceptional characteristic of the companies, an allure of *über* science. It is an 'extrematization' to describe the bigness and seriousness (Potter, 1996: 176), of the technology the companies hold in their hands. Oops, I also used an anthropomorphism...

In another extract, this time following the headline "Mutants = incalculable risk", there is further evidence of this construction of an oppositional subject, along with certain allusions to science:

> *Extract 9:*
> *Many independent scientists and researchers have put down the negative consequences of the production and use of mutant products of biotechnology. Thus, the only things the multinational lobby of Genetic Engineering could objectively promise us is:*

In the second sentence, there is the reference to a "multinational lobby of Genetic Engineering". Is this the proper name of the oppositional subject? At least in this document, it is the only description of an all-encompassing entity. It carries a lot of negative connotations: the word "lobby" is usually associated with powerful pressure groups, working under the surface of democratic politics for particular powerful interest groups, "multinational" is a description alluding to entities beyond the realities of everyday people (at least for small countries like Greece), while "Genetic

Engineering", in a second appearance with capital letters, hints again to that quality of *über* science put into bad purposes, while also indicating the trade of the lobby, the interest group of the multinationals. This subject is opposed and refuted in this extract by "many independent scientists and researchers" who have stressed out the disadvantages of G.M.Os. Using and reporting the footing (Goffman, 1981) of an independent scientific source, serves to rhetorically warrant and legitimize the allegations against the multinational lobby (Abell cited in Billig, 2003), it serves as a stake inoculation (Potter, 1996), a backing argument in a political debate. Moreover, there is the plural form: "many independent scientists" are juxtaposed rhetorically against the "lobby", creating an "us and them" conflict again.

This extract is part of the text coming after the headline of "what are the mutants" when there is the description, drawn from "independent scientists and researchers" of the consequences and effects of the release of G.M.Os. In specific, this extract follows the headline of "for the public health", documenting the effects on it. In this extract, we have the use of the term G.M.Os in the Greek abbreviated form (Γ.Τ.Ο.).

> *Extract 10:*
> *(the G.M.Os can resist the action of abdominal fluids of the digestive system and through the intestinal flora pass through and affect every cell of the organism causing irreversible mutations to the ordinary genes which could lead to new – unknown – genetic illnesses or cancers. The side-effects could pass on to the offsprings and to all future generations).*
> *The outcomes in Public Health and the environment of their cultivation cannot be estimated and are irreversible. If they are released, there is no possibility of withdrawal.*

The language of the text draws on scientific vocabulary, but delivered in an easy-to-understand way, without explanations and definitions. The 'genre' of the text is

therefore changed in the bracketed paragraph, coming from a scientific voice (of "independent scientists and researchers") aiming to popularize but without losing the authority of science. Examples of this are the words of "abdominal fluids", "intestinal flora", "digestive system", seldom used in everyday Greek. The abbreviated use of *genetically modified organisms* as "G.M.Os" ("Γ.Τ.Ο.") is inscribed in a text where there is predominant use of 'scientistic' (Harré et al., 1999) language giving back-up information on the action of the G.M.Os, so the use of the connotated "mutants" must be avoided in order for the text to gain some of the legitimacy of the scientific 'genre'. The use of brackets enclosing the paragraph is also indicative, like making a note, giving further information that are not as important, but mostly marking a disruption, a change form the rest of the text. This heteroglossia (Bakhtin, 1981) of voices and genres inside the document adds to the rhetorical strategy of articulating a reasoned and well-documented *anti-logos,* rooted in independent scientific evidence. It is a limited heteroglossia though, as there is no reference to the voice of "them" in the paragraph, in order to be rebutted or denounced, instead, "they" are demonized as opponents of "independent" science, an interest "multinational lobby". The use of the contingent repertoire ("could", "new – unknown - ", "cannot be estimated"), in a scientistic context, under the footing and the voice of "independent scientists" is crucial here to rhetorically demonize and refute the proponents of G.M.Os.

3.3: Introduction to the Third Document

This document is part of the "facet" web-page of the Greenpeace campaign against

G.M.Os. It is the first thing to be seen when searching for Greek Greenpeace's action on this issue. So, it is rhetorically constructed to give an introduction to the campaign and lead to other, more specific web-pages. The document is entitled "The mutant threat"[23], using again the preferred term to refer to G.M.Os.

3.3.1: The Actions of "Us"

I will focus on an extract where the N.G.O accounts for its action, while rhetorically constructing an "us and them" inter-group conflict. They are creating a narrative of a brief chronicle to present their actions and campaigns and stress the results.

> *Extract 11:*
> *Since 1997, we are giving a hard and multi-faceted struggle against the multinationals of the mutants. Through information campaigns for the consumers, random sampling tests in food and seeds and dynamic actions in the appropriate agencies and companies, we are fighting to know what we are eating and to sustain the biodiversity of the planet. Due to our campaign, Greece has a positive, world first: since November of 2003 when our campaign started for the designation of our country into a Mutant-Free Zone, in 10 months (September 2004), every Prefectural government of our country has voted against the cultivation of mutants and they have been designated Mutant Free Zones.*

Greenpeace is starting by explicitly indicating the opponent of their "struggle" against the "multinationals of the mutants", thus denoting the "them" side of the conflict. What is interesting in this sentence is that Greenpeace gives the multinationals the characterization "of mutants", instead of "Genetic Engineering", like the Pan-Hellenic Movement does (i.e. Extract 8), naming their products only and not on their technologies of production. It is situated chronically, in 1997, indicating the start of the debate and of the activist movement in Greece (Sakellaris & Chatjouli, 2001),

[23]This document can be found at: http://www.greenpeace.org/greece/campaigns/91306 . Consulted on the 6/07/05.

incited by Greenpeace. The pronouns throughout the text, “we”, “our” are suggesting a collective subject of action[24], but who are “we” ? As Maitland and Wilson (1987) suggest, there is an ambivalence in the use of “we” in political speech. In the extract, it refers both to Greenpeace, as an N.G.O. which addresses the public, and to the Greek citizens, as the readership, widening the agent of collective action from the activist in-group of Greenpeace to the outer-group of the public, the 'inclusive we' as Mühlhaüsler and Harré (1990: 170) suggest. In that way, the activist group is rhetorically identified with the public, indicating a social mobilization (Della Porta & Diani, 1999) not an activist-mediated protest. In the particular extract, there is this continuous shift of agency in the verbs used, from “we are giving” ("δίνουμε") indicating Greenpeace's agency excluding the public, to “we are eating” ("τρώμε"), including the activists and the public, “we are fighting to know” ("αγωνιζόμαστε για να γνωρίζουμε") and “to sustain” ("διατηρήσουμε"), suggesting the social mobilization of both groups, thus widening the agency of an inclusive subject. The same thing happens with the possessive pronouns, where “our” is similar, in the same sentence, in “our campaign” and “our country”, but indicating different degrees of inclusion, the former referring to Greenpeace as an actor, while the latter is inclusive of all the citizens of Greece. In fact, the text, being written in Greek, presupposes a Greek readership, not the whole world.

On the other side, the extract is organized rhetorically to account for the tactics and the action of the N.G.O. Greenpeace specifies the time span of the campaign, with

[24]I have to point out that in Greek, the pronouns are some times incorporated in the verb, changing its suffix. This is the case here, so the actual pronouns indicated are missing from the original, but they are given in the translation.

exact dates, 10 months, quite fast! They also present three of their tactics and their outcome. The "information campaigns", the "random sampling tests" and the "dynamic actions" are all reminiscent of what Wapner (1996: 154) frames out as the strategy of Greenpeace: 'to change consciousness, to alter people's minds and actions, throughout the world by disseminating an ecological sensibility'. Thus, the designation of all prefectures of Greece as Mutant-Free Zones is stated as the outcome of "our campaign", indicating its success. This success is positively categorized, described as a "positive, world-first". Hence, the mobilization of the social subject of "us", of the public and the N.G.O. is rhetorically linked to the campaign and its success. But what is the composition of the subject of "us"?

3.3.2: Who are "we"?

> *Extract 12:*
> *Millions of citizens, scientists and organizations from all over the world are against the release of mutant organisms to the environment and their use in foods and they worry for possible consequences.*
> *The genetically mutant products are not tastier, more nutritious, cheaper or more profitable that the natural ones. They are created, produced and promoted in the market on the sole reason of the financial interest of the multinationals of the mutants.*

In this extract, there is the briefest possible description of the social subject of "us", even though the word itself is not specifically mentioned. The 3-part list (Jefferson, 1990) of "citizens", "scientists" and "organizations", with the generalization of "all over the world" is constructing rhetorically a multitude (Hardt & Negri, 2005), a worldwide subject against the G.M.Os[25]. In the documents of the Pan-Hellenic

[25] It is interesting that, since the original is a web page, it incorporates elements of hyper-text. So, the word "against" in the extract is a hyper-link to the results of a survey from 2001, which states that 93.3% of Greek citizens are against G.M.Os.

Movement against G.M.Os, this subject is called as “civil society”. Especially the mention of scientists is designed to rhetorically refute the argument of the scientists – advocates of agricultural genetic engineering that the resistance to G.M.Os is irrational, un-scientific, or fundamentalist (Cook, 2004). The explicit declaration of the *will* of the multitude, as being against the release to the environment and the use in the food system, is further constructing a subject of “us”, a social movement with distinct goals. In the same phrase the use of the verb “they worry” (“ανησυχούν”) is assigning metaphorically a single mind and anthropomorphic qualities in a multitude of persons.

In the second paragraph of the extract, Greenpeace is denouncing “them” as a subject. The N.G.O. is doing what Gardiner (1992: 2) coins out as 'popular deconstruction'. In simple words, in two sentences, the advantages and the arguments in favor of G.M. food are refuted in an assertive way. There are two lists of assertions, organized rhetorically as an antithesis, a contrast (Edwards & Potter, 1992), by the use of negative verbs in the first sentence. The first sentence of the contrast describes what the “mutants” are not, with four adjectives, and the second one, a 3-part list of verbs, describing why they exist, due to “the financial interest of the multinationals of the mutants”. The effect is the maximization of the rhetorical significance of the claim (Potter, 1996). In this extract, Greenpeace is rhetorically oriented at 'showing their opponents' lack of moral credibility, rather than attacking directly such matters which were not wrong in themselves, but only if moral issues were overlooked in their pursuit' (Radcliffe, 2000: 188). So, the clear distinction between “us and them” is established. “Them” are demonized and denounced, as biased and profit-driven. This

rhetoric, by effectively demonstrating the lack of morals of "them", is showing their stake, the "financial interest" of the multinational corporations, thus discrediting them. Across the documents, the subject of "we" is contrasted with "them" on that basis: "we" are presented as having no interest, while "them" as driven by their profits. So, it is implied that the subject of "we" can be trusted in its claims, while them cannot.

3.4: Introduction to the Fourth Document

This is another document coming from the Pan-Hellenic Movement against the G.M.Os. It is a fairly recent one[26], contemplating on the prospect of new Greek legislation, allowing the introduction, cultivation and selling of G.M.Os in Greece and calling for action. This document can be found in the facet web-page of the Movement, indicating its importance.

3.4.1: The Call for Anti-Logos

The thirteenth extract contains the titles and the first paragraph of the document. It introduces the subject and gives the facts addressed in the whole text.

Extract 13:

Resist Souflias' legislation act that introduces mutants in Greece

(whoever wants to live must speak up now)

The sudden decision of the minister of Environment, Urban Planning and Public Constructions to incorporate into the national legislation the European Directive 18/2001 (and the rules of 1829-1830/2003) bearing the title: "Deliberate Release of G.M.Os to the environment" constitutes an outright proclamation of war against the Greek society, the natural environment, our civilization and our Constitution.

[26]It can be found at http://www.nogmos.gr/ Accessed on the 15/07/05. All emphasis and fonts as in the original.

To start with, the verb "resist" ("αντισταθείτε"), is a second-person imperative for action. Of course, the verb itself implies the existence of a generic subject, a "you", a readership which is going to resist, but also implies a threat, an opponent. This title also bears a strong rhetorical value, calling specifically against the legislation act of Souflias, the minister of Environment, Urban Planning and Public Constructions. It is significant mostly because of the bracketed text, directly below the bold font of the headline, in a different tone. This phrase, which also provided the title of this dissertation, fell into my attention for a variety of reasons. At first, it is in brackets, which signifies that it is a meta-message, a comment in the form of a direct fear-appeal to the audience intended to draw its attention. Moreover, it has a tone of fatality which immediately grasps your eye. This rhetorical warning, "whoever wants to live" ("όποιος θέλει να ζήσει") is playing with conditionality and the second and third person, in the Greek language. Even though it is set in an indefinite, male third-person structure, the inference drawn is "if you, reader, want to live, you have to do such and such". But, since it is such a deadly condition, as losing your life, the call for action is rendered imminent. This is clearly a subject positioning, in a sex-indeterminate personal reference (Mühlhaüsler & Harré, 1990), referring to a general subject, a "you", moved by the fatality of the warning, by the call for action[27], in the procedure of interpellation (Althusser, 1971). It is also positioning the text as important, in a direct appeal to the readership. What is the action? "Speak up now" ("να μιλήσει τώρα"). Hence, the title of the dissertation, as the "rhetorical struggle". This invocation of a vocal act, instead, say, for a call of boycotts or demonstrations is

[27] Mühlhaüsler & Harré (1990) mention that this sort of use of the masculine pronoun marginalises women in the positioning, but, currently, Greek language is inherently sexist in its use of pronouns, mostly in political discourse. Anyway, this would need only an audience study to find out.

very characteristic of the anti-G.M. struggle in the Greek context. In a previous extract, from the same group, there was this phrase "the civil society has the right to speak". So, speaking up, expressing dissent and refuting the arguments of the opponent by articulating informed critique, an *anti-logos*, seems to be more important for this movement than spectacular oppositional geometries of colliding bodies marching in a demonstration[28].

In the main text of the extract, which in the whole document is more like an abstract or the introduction, the use of the E.U. directive's numbers adds on facticity and authority on the call for action. Like the quantification techniques that Potter described (1991), it gives the impression that there is factual evidence, decisions that one can look up to verify. Moreover, this technique contextualizes the claims in the body of literature and the traditions of legal science and the European law. The use of the extreme metaphor "outright proclamation of war", apart from maximizing the effect of the rhetorical claim of the extract (Potter & Edwards, 1991), carries the connotation of the conflict between "us and them", two opposing armies to be engaged in a war. It depicts "them" as the initiators of the war, not "us". This time, the Greek state and its minister are set in the side of "them", having proclaimed a war against "the Greek society, the natural environment, our civilization and our Constitution". This lengthy list has the role of culminating, by providing rhetorical commonplaces (Billig, 1987), arguments that no sensible person would want to confront. Particularly elected politicians. In this invocation of commonplaces, there is explicit reference to the shared national identity, mentioning the "Greek society"

[28]So, only two public demonstrations were organized against the release of G.M.Os.

(with a capital G) “our civilization”, “our Constitution”, hence broadening the scope of “us” into all the Greek public[29] using the 'inclusive we' of Mühlhaüsler and Harré (1990: 170). It is rhetorically constructing a widespread social mobilization, just like Greenpeace did, in the previous extract. In fact, the mention of “our civilisation”, apparently something not directly affected by an introduction of G.M.Os, is specifically designed to invoke a shared pride for the common history and culture, a member's resource (Fairclough, 2001), something Greek people treasure. In that way, “you” as the subject of the verb “resist” becomes “we” as Greeks.

3.4.2: “Us” in Sacrifice

This practice is to be continued in the following extract, further on in the document stressing even more the shared Greek national identity, against the government and “them”.

> *Extract 14:*
> *The Directive the government ratified on a ministerial decision is sacrificing to the principle of antagonism and to the profits of a few companies every moral and social principle, like the **“Principle of Caution”**, the **“Democratic Principle”** and the **“Principle of Sovereignty”** of the Greek state. It is finally sacrificing even our own Constitution, turning the Greeks into lab animals and Greek society and nature into an experimental field with incalculable risk.*

The verb used in the extract constructs a powerful emotional allegory (Harré et al., 1999), that of the sacrifice. So, the immolator in the fantastic scene created is the government, taking the part of “them”, sacrificing to the *gods* of “competition” and to “the profits of a few companies” the victims of the above principles. A clear drawing

[29] Assuming, of course, that only Greeks can read it.

of an "us and them" conflict, but with many legal hints[30]. The legal principles of Caution, Democracy and Sovereignty are invoked rhetorically as commonplaces (Billig, 1987), rather than principles defining the state constitution or the legislation. A principle is a socially shared ground of a philosophy of law on which legislation can be based ideally, but it may not be the actual case[31]. In this case, we have the imposition of the principle of antagonism over the principles of Caution, Democracy and Sovereignty, over the Constitution, as noted in the next sentence, all commonplaces that every member of a democratic state accepts as granted.

The other metaphor used in this extract is embedded in the allegory of the sacrifice. It is the metaphor of the laboratory, reminiscent of animal rights activists' discourse. The inference is that once the G.M.Os are allowed into the country, the Greek public will become the lab mice of an experiment, whilst the Greek society and nature will be the experimental habitat of the mice, manipulated and polluted in the same way. This deem warning is repeating the phrase "incalculable risk", found in another document by the Pan-Hellenic Movement, an employment of the contingent repertoire (Gilbert & Mulkay, 1984), designed to emphasize the danger of the lab conditions (for the mice) and maximize the effect of the argument and the consequences. The emphasis in the Greek context, in the use of "our Constitution", as well as the frequent use of the word "Greek", are rhetorically invoking this shared national identity in order to broaden the subject of "us", a national "us", against the government and the profit-driven companies, presumed to be multinationals.

[30]And I have to thank now Alexandros Ilias for explaining them to me.
[31]The principles are written in bold fonts and in inverted commas, to point out their importance and shared acceptance.

3.4.3: The Anti-Logos of the Civil Society

The next extract consists of the count of the forces of the "us" side, and the call to speak up, to articulate the *anti-logos*. The extract itself, is organized in two paragraphs, the one describing the reasons for action, while the other is naming the subjects that have to speak up.

> *Extract 15:*
> *Now that the companies of the mutants are legally settling down in our country, threatening in an unprecedented way the greek society, nature and civilization, nobody can avoid their responsibilities.*
> *Scientific associations, political parties, the church, the Judicial system and the citizens are asked to say the big NO to the unprecedented threat. In another way, they will be accountable to the generations of Greeks to come.*

To begin with, there is the temporal aspect given by the word "now" ("Σήμερα"). Apart from a time specification, it is also marking the imminence of the struggle. Then, there is the reference to the fact that the government has permitted the arrival of the multinationals producing G.M.Os in Greece, "legally" under Souflias' act mentioned in a previous extract. What would be the consequence of that? The threat to the Greek society, nature and civilization. By using again those commonplaces and the invocation of "our country", our civilization, there is emphasis added to the need for action by "us", being Greek. In extent, with the phrase "nobody can avoid their responsibilities" comes the ethical plight for action, the address to the readership, by shifting the call for action from the social and political field, to the individual responsibilities of everyone.

In the next paragraph, there is the explicit statement of the social forces that have to take action. The call-out for "scientific associations", "political parties", "the church",

the "Judicial system" and "citizens" is describing civil society, in the Hegelian conception hinted in a previous document, it is the call-out to the troops of "our" side, in the "us and them" war[32]. The action asked is to "say the big NO". Another vocal and rhetoric element, another reference to the anti-logos, to speaking-out, to articulating dissent and critique. Moreover, this is a rhetorical use of a popular narrative in the recent Greek history. It is taught in schools that in 1940, when the Italian fascist dictator B. Mussolini announced to the Greek (equally fascist) dictator I. Metaxas that he was planning to invade Greece and demanded occupation rights to strategic Greek sites, the Greek dictator replied with an angry NO![33] The explicit negative response, also asked here in the face of an "unprecedented threat", is an example of a shared member's resource (Fairclough, 2001), where a socially shared narrative is drawn to become the backbone of a call for action. It is a national reference, presupposing a Greek audience. In the last sentence of the extract, there is recourse to that popular metaphor of Greenspeak (Harré et al. 1999) of the limited resources of the earth, an argument usually phrased as "we didn't inherit this planet from our ancestors, but we borrowed it from our children". The effect is to solidify the argument and the call for action, by stressing the element of blame and accountability, facing the "Greeks to come", another emphasis on the national identity.

Chapter Four: Discussion and Conclusion

Prior to any attempt to discuss the analysis, I feel that it is necessary to stress the field

[32]The coalition of all those social forces is something the Pan-Hellenic Movement managed to succeed, by convincing all of them to sign a declaration against the release of G.M.Os in the Greek territory.

[33]I owe the terms of structuring this popular narrative to wikipedia, the internet free encyclopedia: http://en.wikipedia.org/wiki/Metaxas

of the research. The internet, as a site for communication, information and research, has brought conducive change in the way the information is provided (or shared) and in this case, in the way activism is organized nowadays. Furthermore, I have to note that apart from the four documents analyzed for reasons of space in this thesis, there were many more in the two websites I consulted, and countless others in other websites, creating a web 'ring' against the G.M.Os. This 'rhizomatic' spreading of information in a network may be too hard to incorporate in a research project, but it provides useful interactive resources for concerned citizens, users and activists. Just to give a glimpse of what was excluded from the presented analysis, I found a medical association report on the risks of G.M.Os, a legislation proposal and its argumentation, a briefing on current European legislation, newletters from both Greenpeace and the Pan-hellenic movement, letters to Greek Ministers and farmer's unions, a guide to G.M. ingredients of foods, as well as personal texts of members of the two groups, all available publicly.

In all of the documents analyzed, from both groups, there were certain common features, that propelled some thoughts of mine on their rhetorical claims and accomplishments. To start with, there is the preference for the word “mutants”, instead of genetically modified organisms (G.M.Os). This preference is common in both groups and it has influenced the choice of words of the public and the press in Greece, winning over the 'struggle over the sign' (Gardiner, 1992). Another theme is that “genetic engineering” is categorized negatively, in the texts of Greenpeace it is associated with the 'contingent' repertoire of uncertainty and risk, describing the

agricultural applications; in the texts of the Pan-Hellenic movement, it is associated with the multinational corporations, which are given the characterization “of Genetic Engineering”. Another common resource is the 'scientistic' vocabulary (Harré et al., 1999) invoked to describe the processes of genetic engineering, used by both groups to explain and describe what is genetic engineering and why they are against the “mutants”, in effect to communicate their arguments against G.M.Os in a way that 'the prestige of the terminology is used without such (scientific) grounding' (ibid: p.64). Finally, a common resource is the inter-group distinction between “us and them”, where “we” are a multitude of persons, associations and groups against G.M.Os and “they” are the multinational corporations, the pro-G.M. scientists and the government that advocates the introduction of G.M.Os in Greece. There is also the amputation of stake to “them”, to the multinational corporations, which are rhetorically constructed as biased and profit-driven, so their position is discredited and their allegations rendered incredible. We also see that in the documents of the Pan-Hellenic movement there is a strong national element characterizing the “us and them” distinction, identifying “us” with the whole of the Greek citizens.

In discussing the documents analyzed, we need to have in mind that they come from a social movement and two groups opposing a situation and potentially, advocating social change. It is also noteworthy that the pressure of the anti-G.M. campaign in Greece has been successful: all the Prefecture Governments have declared that they are G.M.-Free Zones, while the elected state ministers are at the European forefront against G.M.Os, for instance the Minister of Environment advocated a ban on

genetically engineered corn and cole seed (Eleytherotypia, 27-28/06/05). Moreover, the high levels of refusal of G.M.Os by the Greeks, over 80% when the European mean is about 50%, as documented in the press (Eleytherotypia, 14/06/05) and by Greenpeace (December 2001), are outcomes of the efforts of the anti-G.M. movement.

I intend to build on the concept of 'popularization' Calsamiglia and van Dijk (2004) used in their study concerning the Spanish press reporting on the genome. They defined popularization as 'a vast class of various types of communicative events or genres that involve the transformation of specialized knowledge into 'everyday' or 'lay' knowledge, as well as a recontextualization of scientific discourse', as 'popularization discourse needs to be formulated in such a way that non-specialized readers are able to construct lay versions of specialized knowledge and integrate these with their existing knowledge' (Calsamiglia & van Dijk 2004: 370). Popularization has been quite important in Greece, as there is widespread ignorance about genetic engineering and science, proven in the Euro barometers (Pardo et al. 2002). So, popularizing texts as the analyzed, help the readership understand and contextualize contested scientific terms, while communicating a specific environmental viewpoint and contesting another. To achieve the popularization, necessary has been the use of scientistic vocabulary (Harré et al., 1999: 51), defined as 'the use of a scientific vocabulary outside its usual area of application', a 'bona fide science', which borrows the voice of authority of science in order to recontextualize the techniques of genetic engineering in the reading of the anti-G.M. movement. There is also use of the two

repertoires Gilbert and Mulkay (1984) proposed, the empiricist and the contingent, to distinguish between accepted and “bad” science in the Greek context. Hence, this was their accomplishment across the documents: the popularization of the knowledge about the G.M. foods and genetic engineering. This popularization action, as it is advocated by the Greek anti-G.M. movement, defined their role as counter-experts (Purdue, 2000), providing information and explaining new concepts and mostly 'challenging the expert formulations of risk and regulation' (Purdue, 2000: 65).

Another tool the anti-G.M. movement used is the distinction between the social subjects of “us and them”. The subject of “us” is of Greek nationality: the documents are written in Greek, presupposing a native audience, and there is frequent invocation of shared values, like the country, the environment, the culture. In effect, they have managed to produce a collective identity (Melucci, 1996), through establishing shared definitions (e.g. of the “mutants”, or of genetic engineering), which in extent, became hegemonic in the Greek audience. Thus, the anti-G.M. social movement managed to establish that collective, anti-G.M. identity in the Greek society, by internalizing the anti-G.M. campaign in the Greek society. Moreover, they managed to impute a shared definition of “them”, as biased, discrediting their rhetoric while constructing a multinational enemy, a lobby of interests hostile to the national “us”, which should also be kicked out of the country.

The use of popularization and counter-expert information, along with the shared

definitions and the collective identities, has been theorized in the programs of Paulo Freire for *Education of Critical Consciousness* (1973) in Brazil and adult literacy later in Africa. The careful choice of words, embedded in a specific context, the use of themes with which people are familiar, the struggle for liberation against all forms of exploitation, are all pedagogical devices encapsulated in Freire's method to achieve 'conscientization' or critical consciousness (Elias, 1994). The former concept is described as "the process in which men, not as recipients, but as knowing subjects achieve a deepening awareness both of the socio-cultural reality which shapes their lives, and of their capacity to transform that reality through action upon it" (Freire, 1985: 27). In the anti-G.M. movement, popularized information and shared inter-group definitions allowed that critical awareness of the socio-cultural reality. This conscientization, moreover, brought about the dissent: the widespread rejection of G.M.Os in Greece[34] and the public pressure for a ban on their import and cultivation. In effect, the concerned individuals, as "knowing subjects", who are browsing the web-sites of Greenpeace and the Pan-Hellenic movement, can easily access an immense amount of information in texts, achieving critical awareness, which enables them in a way to become informed citizens and to make up their minds on the debate over G.M.Os.

Finally, this thesis has too limited length to fit and even attempt to grasp all the

[34]It is interesting to juxtapose the critical awareness of G.M.Os that featured in Greece with the Bakhtinian 'carnivalesque' humorous tactics that prevailed in direct, mass actions in the U.K. for the destruction of G.M. plantations (Thomas, 2001).

features of a proper discourse analysis, even so of a social movement. It merely could provide “hunches”, drawn from a limited interpretation of documents. As noted in the introduction, only an in-depth and over-time ethnography could claim to overview most of the aspects of a social movement and verify any of the “hunches” laid out in this thesis. Even that ethnography, in my opinion, should entail 'scholarship with commitment' (Bourdieu, 2003: 17),, it should be a 'politicized ethnography' (Mathers and Novelli, 2005), a critical expertise with solidarity. To take another route, more critical research should be applied to the rhetoric of the various texts in the public sphere advocating the G.M.Os, in order to unravel their persuasive and hegemonic political power. In effect, following van Dijk (1993), the focus of a critical discourse analysis should be the role of power elites of society advocating G.M.Os, attempting the discursive management of the public mind.

APPENDIX:

Extracts: **page**

Documents:

Extracts:

Extract 1:

Η Greenpeace αντιτίθεται στην απελευθέρωση στο περιβάλλον οργανισμών που είναι προϊόντα γενετικής μηχανικής καθώς και στην ιδιωτικοποίηση της ζωής μέσα από αποκλειστικά δικαιώματα ευρεσιτεχνίας σε ζωντανούς οργανισμούς, γονίδια ή τμήματα του γονιδιώματος. Οι γενετικά μεταλλαγμένοι (ή γενετικά τροποποιημένοι) οργανισμοί απελευθερώθηκαν στο περιβάλλον χωρίς να έχει υπάρξει πρότερη και επαρκής γνώση σχετικά με την επίδραση που αυτοί έχουν στο οικοσύστημα, την άγρια φύση και την ανθρώπινη υγεία.

Extract 2:
Οι γενετικά μεταλλαγμένοι οργανισμοί αποτελούν νέες μορφές ζωής που δεν υπήρχαν μέχρι πρότινος στη φύση και που, αντίθετα με τις παραδοσιακές μορφές βιοτεχνολογίας και φυτικής παραγωγής, καταργούν τους φυσικούς φραγμούς που έχουν δημιουργηθεί μεταξύ των ειδών μέσα από εκατομμύρια χρόνων εξελικτικής διαδικασίας. Έτσι, ένα ψάρι και μια φράουλα δεν θα διασταυρώνονταν ποτέ στη φύση, αλλα η γενετική μηχανική το επιτυγχάνει αυτό μέσα στο εργαστήριο. Οι επιστήμονες εξάγουν ένα γονίδιο ψαριού και το εμφυτεύουν σε μια φράουλα δημιουργώντας ένα καθ' όλα νέο οργανισμό. Η γενετική μηχανική έχει τη δυνατότητα να χρησιμοποιεί γονίδια ζώων, φυτών, ακόμα και ανθρώπων.
Όταν οι οργανισμοί αυτοί, οι οποίοι είναι φτιαγμένοι από ανθρώπινο χέρι, απελευθερωθούν στο περιβάλλον και τη διατροφική αλυσίδα, τότε αρχίζουν να αναπαράγονται. Πρόκειται για μια διαδικασία μη αναστρέψιμη, που άπαξ και ξεκινήσει, δεν υπάρχει τρόπος να ανακοπεί. Κανείς δε γνωρίζει, ποιές μπορεί να είναι μακροπρόθεσμα οι επιπτώσεις της απελευθέρωσης μεταλλαγμένων οργανισμών στο περιβάλλον.

Extract 3:
Η γενετική μηχανική περιλαμβάνει την εξαγωγή επιλεγμένων γονιδίων από έναν οργανισμό (όπως ζώα, φυτά, βακτήρια ή/και ιούς), ή την σύνθεση αντιγράφων, και την τεχνητή εισαγωγή τους σε άλλους εντελώς διαφορετικούς οργανισμούς (όπως είναι τα καλλιεργούμενα φυτά). Οι νέοι αυτοί οργανισμοί αποκτούν κάποια νέα χαρακτηριστικά όπως αντοχή σε ένα συγκεκριμένο ζιζανιοκτόνο. Η γενετική μηχανική συνήθως χρησιμοποιεί γονίδια ιών για τη διείσδυση και την προώθηση των ξένων γονιδίων, καθώς και γονίδια ανθεκτικότητας σε αντιβιοτικά, τα οποία λειτουργούν ως γονίδια σήμανσης. Τα εισαγόμενα γονίδια είναι παρόντα σε κάθε κύτταρο του φυτού.

Extract 4:
Θα πρέπει ωστόσο να επισημανθεί ότι η Greenpeace δεν αντιτίθεται στην περιορισμένη σε ελεγχόμενο κλειστό περιβάλλον χρήση οργανισμών που είναι προϊόντα γενετικής μηχανικής, όπως για ιατρικούς σκοπούς. Επιπλέον, η Greenpeace πιστεύει ότι η γενετική μηχανική μπορεί να αποτελέσει πολύτιμο εργαλείο για την κατανόηση της λειτουργίας των φυσικών μηχανισμών, γνώση απαραίτητη για την προώθηση της βιολογικής γεωργίας.

Extract 5:
Το ενδεχόμενο διάφορα μεταλλαγμένα φυτά να αποτελούν κίνδυνο για την υγεία είναι κάτι που δεν μπορεί να αποκλειστεί. Η αυθαίρετη εμφύτυυση ξένων γονιδίων ενδέχεται να δημιουργήσει προβλήματα στο ελεγχόμενο δίκτυο DNA ενός οργανισμού. Το ξένο γονίδιο θα μπορούσε, π.χ. να προκαλέσει αλλαγές στις χημικές αντιδράσεις εντός των κυττάρων ή να παρακωλύσει την κυτταρική λειτουργία. Αυτό μπορεί να οδηγήσει σε ασταθεια των εισαγόμενων γονιδίων, στην εμφάνιση νένων αλλεργιών, τοξικής δράσης και σε αλλαγές στη θρεπτική αξία του οργανισμού.

Extract 6:

Η Greenpeace ειδικεύεται σε περιβαλλοντικά ζητήματα και έχει εστιάσει την προσοχή της στους κινδύνους που σχετίζονται με την απελευθερωση μεταλλαγμένων οργανισμών στο περιβάλλον.
Η χρήση της γενετικής μηχανικής στην ιατρική διαφέρει από τη χρήση της στη γεωργία και τις υδατοκαλλιέργειες όπου πραγματοποιείται μια ευρείας κλίμακας απελευθέρωση στο περιβάλλον μεταλλαγμένων οργανισμών. Σε αντίθεση με τις εφαρμογές στη γεωργία, στην ιατρική, η χρήση των μεταλλαγμένων οργανισμών είναι ελεγχόμενη (στο χώρο και το χρόνο) και γίνεται με τη συγκατάθεση του άμεσα ενδιαφερόμενου (δηλ. του ασθενούς). Στον τομέα της ιατρικής, η γενετική μηχανική χρησιμοποιείται για την παρασκευή νέων φαρμάκων και την εφαρμογή νέων διαγνωστικών μεθόδων. Η χρήση αυτή της γενετικής μηχανικής συνηθως δε σχετίζεται με τη χρήση γενετικά μεταλλαγμένων οργανισμών και την απελευθέρωσή τους στο περιβάλλον.

Extract 7:
Γενετικά τροποποιημένοι οργανισμοί (μεταλλαγμένα)
Τι είναι τα μεταλλαγμένα
Μεταλλαγμένα = Ανυπολόγιστο ρίσκο
Για το φυσικό Περιβάλλον
Για τη Δημόσια Υγεία
ΤΑ ΑΠΕΛΕΥΘΕΡΩΜΕΝΑ ΜΕΤΑΛΛΑΓΜΕΝΑ ΓΟΝΙΔΙΑ
ΔΕΝ ΑΝΑΚΑΛΟΥΝΤΑΙ ΚΑΙ ΔΕΝ ΑΝΑΧΑΙΤΙΖΟΝΤΑΙ
ΑΛΛΑ ΑΝΑΠΑΡΑΓΟΝΤΑΙ
ΤΟ ΛΟΓΟ ΕΧΕΙ Η ΚΟΙΝΩΝΙΑ ΤΩΝ ΠΟΛΙΤΩΝ
ΚΙ ΟΧΙ "Η ΕΠΙΣΤΗΜΗ" ΤΩΝ ΠΟΛΥΕΘΝΙΚΩΝ

Extract 8:
Τα μεταλλαγμένα είναι προϊόντα των εταιρειών Γενετικής Μηχανικής. Στα εργαστήριά τους, επεμβαίνουν και τροποποιούν κατά βούληση, το γενετικό υλικό (DNA) των ζωντανών οργανισμών με συγκεκριμένες τεχνικές.

Extract 9:
Πολλοί ανεξάρτητοι επιστήμονες και ερευνητές έχουν καταγράψει αρνητικές συνέπειες από την παραγωγή και χρήση των μεταλλαγμένων προϊόντων της βιοτεχνολογίας. Έτσι τα μόνα που αντικειμενικά μπορεί να μας υποσχεθεί το πολυεθνικό λόμπι της Γενετικής Μηχανικής είναι:

Extract 10:
(Οι Γ.Τ.Ο. μπορούν να αντέξουν στη δράση των γαστρικών υγρών του πεπτικού συστήματος και μέσω της εντερικής χλωρίδας να περάσουν και να επηρεάσουν κάθε κύτταρο του οργανισμού προκαλώντας μη αντιστρεπτές μεταλλάξεις στα φυσιολογικά γονίδια που μπορεί να οδηγήσουν σε νέες –άγνωστες- γενετικές ασθένειες ή καρκίνους. Οι παρενέργειες μπορούν να περάσουν στους απογόνους και σε όλες τις επόμενες γενιές).

Extract 11:
Από το 1997, το δίνουμε ένα σκληρό και πολύπλευρο αγώνα ενάντια στις

πολυεθνικές των μεταλλαγμένων. Μέσα από εκστρατείες ενημέρωσης των καταναλωτών, με δειγματοληπτικούς ελέγχους σε τρόφιμα και σπόρους και με δυναμικές ενέργειες σε αρμόδιους φορείς και εταιρίες, αγωνιζόμαστε για να γνωρίζουμε τι τρώμε και να διατηρήσουμε τη βιοποικιλότητα του πλανήτη. Χάρη στην εκστρατεία μας αυτή, η Ελλάδα κατέχει μια παγκόσμια, θετική πρωτιά: από το Νοέμβριο του 2003 που ξεκίνησε η εκστρατεία μας για την ανακήρυξη της χώρας μας σε Ζώνη Ελεύθερη από Μεταλλαγμένα, μέσα σε δέκα μήνες (Σεπτέμβριος 2004), όλες οι νομαρχιακές αυτοδιοικήσεις της χώρας μας ψήφισαν ενάντια στην καλλιέργεια των μεταλλαγμένων και ανακηρύχθηκαν σε Ζώνες Ελεύθερες από Μεταλλαγμένα.

Extract 12:
Εκατομμύρια πολίτες, επιστήμονες και οργανώσεις σε όλο τον κόσμο είναι **αντίθετοι** με την απελευθέρωση των μεταλλαγμένων οργανισμών στο περιβάλλον και τη χρήση τους στα τρόφιμα και ανησυχούν για τις πιθανές επιπτώσεις.
Τα γενετικά μεταλλαγμένα προϊόντα δεν είναι πιο γευστικά, πιο θρεπτικά, πιο φθηνά ή πιο αποδοτικά από τα φυσικά. Δημιουργούνται, παράγονται και προωθούνται στην αγορά με μοναδικό κριτήριο το οικονομικό συμφέρον των πολυεθνικών των μεταλλαγμένων.

Extract 13:

Αντισταθείτε στο νόμο Σουφλιά
που βάζει τα μεταλλαγμένα στην Ελλάδα
(όποιος θέλει να ζήσει πρέπει να μιλήσει τώρα)

Η αιφνιδιαστική απόφαση του Υπουργού ΠΕΧΩΔΕ κ. Σουφλιά για την ενσωμάτωση της Ευρωπαϊκής Οδηγίας 18/2001 (και των κανονισμών της 1829-1830/2003) με τίτλο : "Σκόπιμη απελευθέρωση των Γ.Τ.Ο. στο περιβάλλον" στο εθνικό δίκαιο συνιστά απροκάλυπτα κήρυξη πολέμου εναντίον της ελληνικής κοινωνίας, του φυσικού περιβάλλοντος, του πολιτισμού μας και του Συντάγματός μας.

Extract 14:
Η Οδηγία που επικύρωσε η κυβέρνηση με υπουργική απόφασή της θυσιάζει στην αρχή του ανταγωνισμού και στα κέρδη λίγων εταιρειών κάθε ηθική και κοινωνική αρχή όπως η **"Αρχή της προφύλαξης"** η **"Δημοκρατική αρχή"** και η **"Αρχή της κυριαρχίας"** του Ελληνικού κράτους. Θυσιάζει τελικά το ίδιο το Σύνταγμά μας μετατρέποντας τους Ελληνες σε πειραματόζωα και την ελληνική κοινωνία και φύση σε πειραματικό πεδίο με ανυπολόγιστο ρίσκο.

Extract 15:
Σήμερα που οι εταιρείες των μεταλλαγμένων εγκαθίστανται με νόμιμο τρόπο στην πατρίδα μας, απειλώντας με πρωτοφανή τρόπο ελληνική κοινωνία, φύση και πολιτισμό, κανένας δεν μπορεί να αποφύγει τις ευθύνες του.

Επιστημονικοί σύλλογοι, κόμματα, εκκλησία, Δικαστική εξουσία και πολίτες

καλούνται να πουν το μεγάλο ΟΧΙ στην πρωτοφανή απειλή. Διαφορετικά θα είναι υπόλογοι απέναντι στις γενιές των Ελλήνων που έρχονται.

Documents:

1. Συχνές Ερωτήσεις για τα Μεταλλαγμένα

Ε: Ποιά είναι η θέση της Greenpeace σχετικά με τη γενετική μηχανική;

Α: Η Greenpeace αντιτίθεται στην απελευθέρωση στο περιβάλλον οργανισμών που είναι προϊόντα γενετικής μηχανικής καθώς και στην ιδιωτικοποίηση της ζωής μέσα από αποκλειστικά δικαιώματα ευρεσιτεχνίας σε ζωντανούς οργανισμούς, γονίδια ή τμήματα του γονιδιώματος. Οι γενετικά μεταλλαγμένοι (ή γενετικά τροποποιημένοι)

οργανισμοί απελευθερώθηκαν στο περιβάλλον χωρίς να έχει υπάρξει πρότερη και επαρκής γνώση σχετικά με την επίδραση που αυτοί έχουν στο οικοσύστημα, την άγρια φύση και την ανθρώπινη υγεία. Θα πρέπει ωστόσο να επισημανθεί ότι η Greenpeace δεν αντιτίθεται στην περιορισμένησε ελεγχόμενο κλειστό περιβάλλον χρήση οργανισμών που είναι προϊόντα γενετικής μηχανικής, όπως για ιατρικούς σκοπούς. Επιπλέον, η Greenpeace πιστεύει ότι η γενετική μηχανική μπορεί να αποτελέσει πολύτιμο εργαλείο για την κατανόηση της λειτουργίας των φυσικών μηχανισμών, γνώση απαραίτητη για την προώθηση της βιολογικής γεωργίας.

Ε: Τί είναι η γενετική μηχανική; Είναι οι γενετικά μεταλλαγμένοι οργανισμοί επικίνδυνοι; Γιατί η γενετική μηχανική δεν είναι όμοια με τις συμβατικές τεχνικές της βιοτεχνολογίας για τη βελίωση των φυτών;

Α: Η γενετική μηχανική περιλαμβάνει την εξαγωγή επιλεγμένων γονιδίων από έναν οργανισμό (όπως ζώα, φυτά, βακτήρια ή/και ιούς), ή την σύνθεση αντιγράφων, και την τεχνητή εισαγωγή τους σε άλλους εντελώς διαφορετικούς οργανισμούς (όπως είναι τα καλλιεργούμενα φυτά). Οι νέοι αυτοί οργανισμοί αποκτούν κάποια νέα χαρακτηριστικά όπως αντοχή σε ένα συγκεκριμένο ζιζανιοκτόνο. Η γενετική μηχανική συνήθως χρησιμοποιεί γονίδια ιών για τη διείσδυση και την προώθηση των ξένων γονιδίων, καθώς και γονίδια ανθεκτικότητας σε αντιβιοτικά, τα οποία λειτουργούν ως γονίδια σήμανσης. Τα εισαγόμενα γονίδια είναι παρόντα σε κάθε κύτταρο του φυτού.
Οι γενετικά μεταλλαγμένοι οργανισμοί αποτελούν νέες μορφές ζωής που δεν υπήρχαν μέχρι πρότινος στη φύση και που, αντίθετα με τις παραδοσιακές μορφές βιοτεχνολογίας και φυτικής παραγωγής, καταργούν τους φυσικούς φραγμούς που έχουν δημιουργηθεί μεταξύ των ειδών μέσα από εκατομμύρια χρόνων εξελικτικής διαδικασίας. Έτσι, ένα ψάρι και μια φράουλα δεν θα διασταυρώνονταν ποτέ στη φύση, αλλα η γενετική μηχανική το επιτυγχάνει αυτό μέσα στο εργαστήριο. Οι επιστήμονες εξάγουν ένα γονίδιο ψαριού και το εμφυτεύουν σε μια φράουλα δημιουργώντας ένα καθ' όλα νέο οργανισμό. Η γενετική μηχανική έχει τη δυνατότητα να χρησιμοποιεί γονίδια ζώων, φυτών, ακόμα και ανθρώπων.
Όταν οι οργανισμοί αυτοί, οι οποίοι είναι φτιαγμένοι από ανθρώπινο χέρι, απελευθερωθούν στο περιβάλλον και τη διατροφική αλυσίδα, τότε αρχίζουν να αναπαράγονται. Πρόκειται για μια διαδικασία μη αναστρέψιμη, που άπαξ και ξεκινήσει, δεν υπάρχει τρόπος να ανακοπεί. Κανείς δε γνωρίζει, ποιές μπορεί να είναι μακροπρόθεσμα οι επιπτώσεις της απελευθέρωσης μεταλλαγμένων οργανισμών στο περιβάλλον.

Ε: Είναι αλήθεια ότι οι μεταλλαγμένες καλλιέργειες αποτελούν κίνδυνο για την υγεία;

Α: Το ενδεχόμενο διάφορα μεταλλαγμένα φυτά να αποτελούν κίνδυνο για την υγεία είναι κάτι που δεν μπορεί να αποκλειστεί. Η αυθαίρετη εμφύτευση ξένων γονιδίων ενδέχεται να δημιουργήσει προβλήματα στο ελεγχόμενο δίκτυο DNA ενός οργανισμού. Το ξένο γονίδιο θα μπορούσε, π.χ. να προκαλέσει αλλαγές στις χημικές αντιδράσεις εντός των κυττάρων ή να παρακωλύσει την κυτταρική λειτουργία. Αυτό μπορεί να οδηγήσει σε αστάθεια των εισαγόμενων γονιδίων, στην εμφάνιση νέων

αλλεργιών, τοξικής δράσης και σε αλλαγές στη θρεπτική αξία του οργανισμού.
Τα φυτά που είναι προϊόντα γενετικής μηχανικής περιέχουν γονίδια βακτηρίων, εντόμων και ιών που ουδέποτε είχαν αποτελέσει μέρος της ανθρώπινης διατροφής . Επίσης, δεν υπάρχουν πληροφορίες σχετικά με την αλλεργιογόνο δράση τους. Η πιθανότητα των μεταλλαγμένων προϊόντων να προκαλούν αλλεργικές αντιδράσεις δεν έχει εκτιμηθεί και δεν έχει ελεγχθεί.
Επιπροσθέτως, πολλά από τα μεταλλαγμένα φυτά που ήδη καλλιεργούνται για εμπορική χρήση, περιέχουν γονίδια ανθεκτικότητας σε αντιβιοτικά που προορίζονται για τη θεραπεία ασθενειών τόσο στον άνθρωπο όσο και στα ζώα. Τα γονίδια αυτά είναι άχρηστα για την καλλιέργεια των μεταλλαγμένων προϊόντων και στην περίπτωση όπου η ιδιότητα ανθεκτικότητας στα αντιβιοτικά μεταφερθεί σε βακτήρια βλαβερά για την υγεία των ανθωπων και των ζώων, είναι πιθανή η παρεμπόδιση της αποτελεσματικής θεραπείας διαφόρων ασθενειών.

Ε: Δεν είναι αλήθεια ότι η γενετική μηχανική είναι μία τεχνολογία που μπορεί να γίνει απολύτως κατανοητή, που χαρακτηρίζεται από ακρίβεια και προβλεψιμότητα;

Α: Η τεχνολογία που χρησιμοποιείται σήμερα προκειμένου να επιτευχθεί η γενετική τροποποίηση ζώντων οργανισμών (π.χ. ζώων ή φυτών) είναι ακατέργαστη και μή ακριβής. Οι γνώσεις σχετικά με τις επιπτώσεις της γενετικής μηχανικής στο DNA και σε ολόκληρο τον οργανισμό είναι από ελάχιστες ως μηδαμινές. Ούτε επίσης είναι γνωστό το πως θα επηρεαστούν οι απόγονοι στις επόμενες γενιές. Η τεχνολογία που σήμερα εμφανίζεται στη γενετική μηχανική αφορά στην εμφύτευση νέων γονιδίων εντός του DNA.
Η σύγχρονη γενετική έχει δείξει ότι τα γονίδια δεν λειτουργούν απομονωμένα το ένα από το άλλο. Αντιθέτως, αλληλεπιδρούν με περίπλοκο τρόπο, μεταβάλλοντας τη συμπεριφορά τους υπό την επίδραση άλλων γονιδίων. Παρά το γεγονός ότι ένα γονίδιο μπορεί να κοπεί με ακρίβεια από το DNA ενός οργανισμού, η εισαγωγή του στο DNA ενός άλλου οργανισμού είναι εντελώς τυχαία. Αυτό έχει ως αποτέλεσμα τη διάρρηξη της τάξης των γονιδίων στο χρωμόσωμα και είναι δυνατό να προκαλέσει τυχαίες και απρόβλεπτες αλλαγές στη λειτουργία των κυττάρων.

Το DNA είναι ένα σύνθετο μόριο του οποίου η ακριβής λειτουργία δεν είναι πλήρως κατανοητή. Κάτι το οποίο δεν είναι ακόμα πλήρως κατανοητό είναι το πώς η δομή του DNA επηρεάζει την έκφραση των γονιδίων. Αυτό που είναι ωστόσο γνωστό είναι ότι η θέση που κατέχει ένα γονίδιο εντός του DNA ρυθμίζει τη λειτουργία του γονιδίου αυτού - πρόκειται για το Φαινόμενο Θέσεως. Υπάρχει μεγάλη αβεβαιότητα σχετικά με τη θέση και τον αριθμό των εμφυτευμένων γονιδίων, αβεβαιότητα που διαλύεται μόνο εκ των υστέρων με την εφαρμογή ελέγχων που βασίζονται στην αλυσίδα του DNA.

Συμπερασματικά, οι συνέπειες της γενετικής μηχανικής στη δομή του DNA, η ακριβής λειτουργία των γονιδίων και η επίδρασή τους σε ολόκληρο τον οργανισμό είναι στοιχεία που δεν μπορούν να προβλεφθούν με ακρίβεια. Οι υποστηρικτές της γενετικής μηχανικής ενδεχομένως να ισχυριστούν ότι σημαντικό μέρος DNA είναι πλεονάζον και ότι οι μεταλλαγμένοι οργανισμοί που περιέχουν άχρηστα εμφυτεύματα

ή εκείνοι που παρουσιάζουν σοβαρές βιοχημικές ανωμαλίες πρόκειται στο τέλος να απορριφθούν. Ωστόσο, υπάρχει ο κίνδυνος μια σειρά από βιοχημικές ανωμαλίες να εκδηλωθεί σε όψιμα στάδια ή ακόμα και να εμφανιστεί αρκετές γενεές αργότερα. Για πολλές γενεές οι συνέπειες μπορεί να παραμένουν άγνωστες. Τα δε διαθέσιμα στοιχεία αναφορικά με τον τρόπο που ένα εισαγόμενο γονίδιο μπορεί να επηρεάσει τις επόμενες γενεές είναι ελάχιστα.

Ε: Δεν αληθεύει η άποψη ότι η γενετική μηχανική συνιστά μια "πράσινη" τεχνολογία που βοηθά τους αγρότες να χρησιμοποιούν λιγότερα φυτοφάρμακα;

Α: Μία μελέτη που βασίζεται σε περισσότερες από 8.200 πανεπιστημιακές πειραματικές καλλιέργειες κατέδειξε ότι σε σύγκριση με τους αγρότες που καλλιεργούν φυσικές ποικιλίες σόγιας εκείνοι που καλλιεργούν μεταλλαγμένους σπόρους σόγιας χρησιμοποιούν από δύο ως πέντε φορές μεγαλύτερες ποσότητες ζιζανιοκτόνων.

Το έτος 1999, το 70% των μεταλλαγμένων καλλιεργειών εμφάνιζαν ανθεκτικότητα σε μεγάλες ποσότητες φυτοφαρμάκων. Αναφορικά με αυτού του είδους τις καλλιέργειες, η χρήση τοξικών ουσιών είναι στην πράξη αναπόφευκτη. Αυτές που αντιθέτως παραμερίζονται είναι οι τεχνικές που θα μπορούσαν να απαλλάξουν πραγματικά τους αγρότες από την ανάγκη χρήσης χημικών ουσιών.

Πολλές από τις εταιρείες του κλάδου της βιοτεχνολογίας προσπαθούν να πείσουν την κοινή γνώμη ότι οι μεταλλαγμένοι οργανισμοί είναι φιλικοί προς το περιβάλλον αποκρύπτωντας την ίδια στιγμή έναν άλλο στόχο που δεν είναι άλλος από την αύξηση των πωλήσεων των χημικών φυτοφαρμάκων, τα οποία παρασκευάζονται και πωλούνται από τις ίδιες ακριβώς εταιρείες.

Ε: Δεν αληθεύει ότι τα μεταλλαγμένα φυτά χρησιμεύουν προκειμένου να εξασφαλίζεται τροφή για όλοκληρο τον πληθυσμό του πλανήτη;

Α: Πρόκειται για ένα εκ βάθρων σαθρό επιχείρημα που βασίζεται στη λανθασμένη άποψη ότι τα αίτια της πείνας οφείλονται στο χάσμα μεταξύ της παραγωγής τροφίμων και της αύξησης του ανθρώπινου πληθυσμού. Όπως άλλωστε έχει επισημάνει και ο επικεφαλής του Οργανισμού Τροφίμων και Γεωργίας του Ο.Η.Ε., Ζάκ Ντιούφ: "Η Γή παράγει αρκετά τρόφιμα προκειμένου να θρέψει όλους τους κατοίκους της και θα μπορούσε να παράγει ακόμα περισσότερα".

Η πρόσφατη αναφορά του εν λόγω οργανισμού που έχει τίτλο: "Η Γεωργία την περίοδο 2015-2030" παρά το γεγονός ότι αποκλείει τους γενετικά μεταλλαγμένους οργανισμούς οδηγεί στο συμπέρασμα ότι η παραγωγή τροφίμων θα συνεχίσει να αυξάνεται μέχρι το 2030 υπερκαλύπτοντας μάλιστα την πλυθυσμιακή αύξηση. Η αναφορά καταδεικνύει ότι τα πραγματικά αίτια της πείνας και του υποσιτισμού είναι η φτώχεια και η δυσκολία πρόσβασης στα τρόφιμα.

Στην ηλεκτρονική διεύθυνση www.farmingsolutions.org η Greenpeace, η Oxfam, ακθώς και άλλες οργανώσεις που στοχεύουν στην παροχή πραγματικών λύσεων στο

πρόβλημα της πείνας παραθέτουν παραδείγματα κοινωνικά και περιβαλλοντικά βιώσιμων μεθόδων καλλιέργειας οι οποίες εφαρμόζονται σε ολόκληρο τον κόσμο και παρέχουν ασφαλή τρόφιμα που ταυτόχρονα επαρκούν για να θρέψουν μεγάλες πληθυσμιακές ομάδες.

Ε: Δεν αληθεύει ότι τα μεταλλαγμένα φυτά θα σώσουν τους αγρότες;

Α: Στις Η.Π.Α και στον Καναδά - χώρες όπου εδώ και τουλάχιστον πέντε χρόνια υπάρχουν τέτοιου είδους καλλιέργειες - μια ένωση 33 αγροτικών συνεταιρισμών εξέδωσε πρόσφατα ανακοίνωση που προειδοποιεί ότι η εφαρμογή μεθόδων γενετικής μηχανικής στη γεωργία έχει καταστήσει εξαιρετικά αβέβαια την οικονομική κατάσταση των μικρομεσαίων καλλιεργητών σε ολόκληρη την επικράτεια των Η.Π.Α. καθώς και σε άλλες χώρες του κόσμου.

Οι εταιρείες που δραστηριοποιούνται στο χώρο των αγροχημικών και παράγουν σπόρους οι οποίοι είναι προϊόντα γενετικής μηχανικής απαιτούν από τους καλλιεργητές να υπογράφουν νομικά δεσμευτικές συμφωνίες στις οποίες διευκρινίζεται ο συγκεκριμένος τρόπος καλλιέργειας που πρέπει να ακολουθούν και απαγορεύεται η εξοικονόμηση σπόρων εκ μέρους τους. Επιπροσθέτως, οι καλλιεργητές είναι υποχρεωμένοι να πληρώνουν δικαιώματα στις εταιρείες.

Επακόλουθο αυτών είναι ότι εταιρείες όπως η Monsanto μηνύουν τους καλλιεργητές για τους οποίους πιστεύουν ότι χρησιμοποιούν τα προϊόντα των εταιριών (μεταλλαγμένους σπόρους) χωρίς πρώτα να έχουν υπογράψει τις σχετικές συμφωνίες. Εξαιτίας αυτής της επιμόλυνσης, πολλοί καλλιεργητές δυστυχώς εντοπίζουν στα χωράφια τους μεταλλαγμένα φυτά. Αυτό συμβαίνει ανεξάρτητα από το αν οι καλλιεργητές επιθυμούσαν ή όχι να καλλιεργήσουν τέτοια φυτά. Οι μεταλλαγμένοι οργανισμοί, είναι ζωντανοί οργανισμοί, μπορούν να αναπαραχθούν, να μεταφερθούν (π.χ. με τη γύρη, με τα έντομα) με αποτέλεσμα να εξαπλωθούν χωρίς να υπάρχει τρόπος να τους αποσύρουμε όταν διαπιστώσουμε τις όποιες αρνητικές επιπτώσεις τους.

Στον Καναδά, η Monsanto μήνυσε τον Πέρσι Σμάισερ, καλλιεργητή ελαιοκράμβης, επειδή στο χωράφι του βρέθηκε μεταλλαγμένη ελαιοκράμβη, η οποία είχε φυτρώσει εκεί ώς απτέλεσμα της επιμόλυνσης. Μάλιστα, παρά το γεγονός ότι ο Σμάισερ ουδέποτε βέβαια επιθυμούσε την επιμόλυνση, η Monsanto κατέφυγε στη δικαιοσύνη και κατάφερε να αποδείξει ότι σε κάθε περίπτωση ο εν λόγω καλλιεργητής οφείλει να της καταβάλει χρήματα.

Οι καλλιεργητές που ακολουθουν τις συμβατικές μεθόδους έχουν ανακαλύψει ότι οι τυχόν μεταλλαγμένες καλλιέργειες σε διπλανά χωράφια έχουν μετατραπεί σε ζιζάνια, τα οποία δεν μπορούν να απομακρυνθούν με τη χρήση ζιζανιοκτόνων, ακριβώς επειδή η γενετική μηχανική τους έχει προσδώσει τεράστια αντίσταση σε αυτά. Όσον αφορά τον Καναδά, η Βασιλική Εταιρεία - μια από τις παλαιότερες και πλέον διακεκριμένες επιστημονικές ενώσεις - προειδοποιεί ότι τεράστιες καλλιεργήσιμες εκτάσεις της χώρας έχουν προσβληθεί από ζιζάνια ελαιοκράμβης ανθεκτικά στα ζιζανιοκτόνα των οποίων η καταπολέμηση θα επιβαρύνει οικονομικά τους

καλλιεργητές.

Οι καλλιεργητές στις Η.Π.Α. και τον Καναδά, όταν ολοκληρώνουν τη συγκομιδή, έρχονται αντιμέτωποι με ένα επιπρόσθετο πρόβλημα που αφορά τις καλλιέργειες μεταλλαγμένων φυτών και δεν είναι άλλο από το γεγονός ότι οι ξένες αγορές δεν είναι διατεθειμένες να εισάγουν προϊόντα τέτοιας καλλιέργειας. Στον Καναδά, συνέπεια της καλλιέργειας μεταλλαγμένης ελαιοκράμβης ήταν η κατακόρυφη πτώση των εξαγωγών της στην Ευρώπη. Το ίδιο έχει συμβεί με το καλαμπόκι από τις Η.Π.Α., το οποίο δεν πωλείται πλέον στην Ευρώπη και έχει αποκλειστεί από σημαντικές ασιατικές αγορές.

Ε: Η γενετική μηχανική είναι η μόνη λύση για τη γεωργία;

Α: Η εφαρμογή της γενετικής μηχανικής στη γεωργία προτείνεται ώς η μόνη λύση στο σημερινό της αδιέξοδο (εκτεταμένη χρήση φυτοφαρμάκων, υποβάθμιση χλωρίδας και πανίδας, μείωση βιοποικιλότητας, διάβρωση εδαφών κ.λ.π.) Τα μέχρι σήμερα γνωστά στοιχεία δεν δικαιολογούν την παραμικρή αισιοδοξία. Αντιθέτως, η παρουσίαση της γενετικής μηχανικής ως λύσης στο σημερινό αδιέξοδο της γεωργίας, εμποδίζει την προώθηση του μόνου οικονομικά και περιβαλλοντικά βιώσιμου μοντέλου, αυτού της βιολογικής γεωργίας. Μια σύγκριση ανάμεσα στα ερευνητικά κονδύλια που δίνονται στη γενετική μηχανική και στα αντίστοιχα κονδύλια που δίνονται για έρευνα στη βιολογική καταπολέμηση ασθενειών μας δείχνει ότι, παρά την έντονη αντίδραση του κοινού, η εφαρμογή της γεντικής μηχανικής εξακολουθεί να προωθείται από εταιρείες, κυβερνήσεις και επιστήμονες. Δυστυχώς, αυτή η στάση ακυρώνει κάθε σοβαρή προσπάθεια για την προώθηση της βιολογικής γεωργίας, μέσα από σταθερά βήματα που θα εξασφαλίσουν την προώθηση ποιοτικών προϊόντων, την προώθηση τοπικών ποικιλιών, την απεξάρτηση από τα φυτοφάρμακα, κ.λπ.

Τί είναι τα προϊόντα Bt; Αληθεύει ότι είναι επικίνδυνα;

Τα προϊόντα Bt είναι σχεδιασμένα προκειμένου να αναπτύσσουν εντομοκτόνο δράση. Τα προϊόντα αυτά κατασκευάζονται με τη μέθοδο της εμφύτευσης ενός συνθετικού γονιδίου από το φυσικά παραγόμενο βακτήριο *Bacillus thurigiensis* (γνωστός ως Βάκιλος της Θουριγγίας ή Bt) προκειμένου τα φυτά να παράγουν τις δικές τους τοξίνες Bt και να εξολοθρεύουν τα παράσιτα. Καλαμπόκι, βαμβάκι και πατάτες τύπου Bt ήδη καλλιεργούνται σε ευρεία κλίμακα και προορίζονται για εμπορική χρήση (ιδιαίτερα στις Η.Π.Α.) ενώ υπάρχουν και άλλα προϊόντα Bt τα οποία αυτή τη στιγμή εξελίσσονται εργαστηριακά (ελαιοκράμβη, ρύζι, ντομάτες).

Υπάρχουν στοιχεία που ενισχύουν την άποψη ότι η βιασύνη προκειμένου τα προϊόντα Bt να προωθηθούν στην αγορά ενέχει σοβαρούς κινδύνους για το περιβάλλον και την ανθρώπινη υγεία. Επιστήμονες που εργάζονται για διάφορες ευρωπαϊκές κυβερνήσεις θεωρούν ότι τα γονίδια μεταλλαγμένου καλαμποκιού που παράγεται από την πολυεθνική Syngenta και ιδιαίτερα εκείνα που προσδίδουν αντίσταση στα αντιβιοτικά αποτελούν μεγάλο κίνδυνο για την υγεία των ανθρώπων και των ζώων καθώς και για το περιβάλλον. Επιπλέον, σύμφωνα με πληθώρα

επιστημονικών στοιχείων, το καλαμπόκι Bt φέρεται να έχει αρνητικες επιπτώσεις τόσο στα έντομα στόχους (αύξηση της ανθεκτικότητας των εντόμων) όσο και σε χρήσιμα έντομα.

Ε: Τί είναι το "χρυσό ρύζι"; Δεν αληθεύει πώς η χρήση του σώζει από απώλεια της όρασης τα παιδιά εκείνα που πάσχουν από έλλειψη της βιταμης Α;

Α: Πρόκειται για μια ποικιλία που έχει υποστεί εργαστηριακή επεξεργασία προκειμένου να παράγει προβιταμίνη Α. Οι υποστηρικτές του προϊόντος διατείνονται ότι η συγκεκριμένη ποικιλία μεταλλαγμένου ρυζιού θα βοηθήσει στην καταπολέμηση της έλλειψης βιταμίνης Α - έλλειψη που θα μπορούσε π.χ. να οδηγήσει σε απώλεια της όρασης - στις αναπτυσσόμενες χώρες.

Σύμφωνα με τους ερευνητές που ηγούνται του συγκεκριμένου προγράμματος, η εν λόγω ποικιλία ρυζιού είναι έτοιμη για καλλιέργεια. Η λέξη "έτοιμη" δε συνεπάγεται όμως και την απαιτούμενη γνώση σχετικά με τις επιπτώσεις του προϊόντος στο περιβάλλον και την υγεία. Στην πραγματικότητα το "χρυσό ρύζι" είναι ένα εργαστηριακό προϊόν που δεν έχει περάσει τους απαιτούμενους ελέγχους ενώ τα επιχειρήματα σχετικά με τη συμβολή του στην καταπολέμηση διαφόρων προβλημάτων υγείας είτε χαρακτηρίζονται από υπερβολική αισιοδοξία, είτε κινούντια μεταξύ ευχολογίου και φαντασίας.

Το "χρυσό ρύζι" δεν αποτελεί λύση απέναντι στα θεμελιώδη αίτια της έλλειψης βιταμης Α τα οποία είναι η φτώχεια και η αδυναμία εξασφάλισης ενός διαιτολογίου που χαρακτηρίζεται από μεγαλύτερη ποικιλία και επαρκή ποσότητα βιταμίνης Α. Πρόκειται αντιθέτως για μια τεχνητή και επιπόλαιη μέθοδο αντιμετώπισης που δεν έχει ελεγχθεί και ενδέχεται να δημιουργήσει νέα προβλήματα. Επιπλέον, όσον αφορά στην έλλειψη της βιταμίνης Α, το χρυσό ρύζι είναι η λιγότερο εξελιγμένη και πλέον επικίνδυνη περιβαλλοντικά λύση. Μακροπρόθεσμα, η λογική της μονοκαλλιέργειας η οποία χαρακτηρίζει την παραγωγή μεταλλαγμένου ρυζιού, ενδέχεται να προκαλέσει σοβαρότατα προβλήματα διατροφής.

Η ενδεχόμενη παραγωγή σε ευρεία κλίμακα του "χρυσού ρυζιού" θα μπορούσε να επιδεινώσει περαιτέρω τα προβλήματα υποσιτισμού και εν τέλει να υπονομεύσει τη σωστή διατροφή, δεδομένου ότι προωθεί μια δίαιτα που στηρίζεται σε ένα προϊόν και όχι στην επαναφορά των πολυβιταμινούχων φυτικών τροφών που ήταν μέχρι πρότινος φθηνές και άφθονες. Τα μεταλλαγμένα τρόφιμα θα προκαλέσουν ένα εύρος προβλημάτων που αφορούν στην έλλειψη άλλων συστατικών - και όχι μόνο της βιταμίνης Α - απαραίτητων για τη θρέψη ενός οργανισμού.

Ε: Τα μεταλλαγμένα προϊόντα είναι ασφαλή;

Α: Οι πληροφορίες σχετικά με την ασφάλεια των μεταλλαγμένων τροφίμων προέρχονται, σχεδόν αποκλειστικά, από έρευνες που έχουν πραγματοποιήσει οι βιομηχανίες οι οποίες προωθούν τους μεταλλαγμένους οργανισμούς. Όπως είναι αναμενόμενο, η αξία και η ακρίβεια των αντίστοιχων ελέγχων εγείρουν σοβαρές αμφισβητήσεις αφού οι εταιρείες που έχουν κατασκευάσει τους μεταλλαγμένους

οργανισμούς έχουν δαπανήσει δισεκατομμύρια δολλάρια και βρίσκονται υπό την πίεση μιας γρήγορης απόσβεσης της επένδυσής τους. Είναι προφανές ότι απαιτούνται μακροχρόνιες ανεξάρτητες μελέτες για να δούμε αν μπορούμε να είμαστε σίγουροι για την ασφάλεια των μεταλλαγμένων τροφίμων. Μια άλλη ανησυχία αφορά στην πιθανότητα αύξησης και επιτάχυνσης της ανάπτυξης ανθεκτικότητας των παθογόνων σε αντιβιοτικά, λόγω της χρήσης αντίστοιχων γονιδίων σε μεταλλαγμένους οργανισμούς και τρόφιμα.

Ήδη και στη χώρα μας έχουν εκφραστεί ανησυχίες για την πιθανότητα εμφάνισης νέων αλλεργιών (Ιατρικός Σύλλογος Θεσσαλονίκης, 2001). Ταυτόχρονα, οι μελέτες για τις επιπτώσεις των μεταλλαγμένων προϊόντων (που χρησιμοποιούνται στις ζωοτροφές) στα ζώα είναι ελάχιστες. Δεν είναι λίγοι όμως οι επιστήμονες που ζητούν την εφαρμογή προληπτικών μέτρων όπως η απαγόρευση της καλλιέργειας μεταλλαγμένων οργανισμών. Υπάρχουν περιπτώσεις επιστημόνων που απολύθηκαν λίγο μετά αφού ανακοίνωσαν τα αποτελέσματα έρευνας σύμφωνα με τα οποία η χρήση μεταλλαγμένων οργανισμών είχε αρνητικές επιπτώσεις.

Ε: Είναι αλήθεια ότι η Greenpeace αντιτίθεται στη εφαρμογή μεθόδων γενετικής μηχανικής στη ιατρική;

Α: Η Greenpeace ειδικεύεται σε περιβαλλοντικά ζητήματα και έχει εστιάσει την προσοχή της στους κινδύνους που σχετίζονται με την απελευθερωση μεταλλαγμένων οργανισμών στο περιβάλλον.

Η χρήση της γενετικής μηχανικής στην ιατρική διαφέρει από τη χρήση της στη γεωργία και τις υδατοκαλλιέργειες όπου πραγματοποιείται μια ευρείας κλίμακας απελευθέρωση στο περιβάλλον μεταλλαγμένων οργανισμών. Σε αντίθεση με τις εφαρμογές στη γεωργία, στην ιατρική, η χρήση των μεταλλαγμένων οργανισμών είναι ελεγχόμενη (στο χώρο και το χρόνο) και γίνεται με τη συγκατάθεση του άμεσα ενδιαφερόμενου (δηλ. του ασθενούς). Στον τομέα της ιατρικής, η γενετική μηχανική χρησιμοποιείται για την παρασκευή νέων φαρμάκων και την εφαρμογή νέων διαγνωστικών μεθόδων. Η χρήση αυτή της γενετικής μηχανικής συνηθως δε σχετίζεται με τη χρήση γενετικά μεταλλαγμένων οργανισμών και την απελευθέρωσή τους στο περιβάλλον.

Ταυτόχρονα, η πρόοδος στη μοριακή βιολογία συμβάλλει στην καλύτερη κατανόηση του φυσικού περιβάλλοντος και στην εξέλιξη της ιατρικής. Ιδιαίτερα για την ιατρική ενδέχεται να υπάρξουν νέες μέθοδοι διάγνωσης και θεραπείας σοβαρών ασθενειών.

Συμπερασματικά, η Greenpeace δεν αντιτίθεται στη χρήση της γενετικής μηχανικής στον τομέα της ιατρικής, Θεωρεί ωστόσο οι συγκεκριμένες έρευνες και εφαρμογές θα πρέπει να διεξάγονται σε συνθήκες απομόνωσης ούτως ώστε να αποφευχθεί η απελευθέρωση στο περιβάλλον μεταλλαγμένων οργανισμών από τους οποίους παράγονται φάρμακα και ορμόνες. Τέτοιοι οργανισμοί εγκυμονούν μεγάλους κινδύνους για την ανθρώπινη υγεία, την άγρια φύση και τα οικοσυστήματα.

Ε: Η Greenpeace αντιτίθεται στην πρόοδο;

Α: Φυσικά όχι. Και γιατί να το κάνουμε άλλωστε; Πρόοδος σημαίνει αλλαγές προς το καλύτερο. ΟΙ αλλαγές προς το χειρότερο αποτελούν βήματα προς τα πίσω. Πρέπει να βεβαιωθούμε ότι τα μεταλλαγμένα φυτά και προϊόντα είναι ασφαλή και προσφέρουν οφέλη στο περιβάλλον, στους καταναλωτές και στους αγρότες, πριν φτάσουν στο πιάτο μας. Δεν πρέπει να δεσμευτούμε σε μια αμφισβητούμενη τεχνολογία, οι εφαρμογές της οποίας μπορεί να έχουν αποτελέσματα απρόβλεπτα και, κυρίως, μη αντιστρεπτά.

Frequently Asked Questions on Mutants:

Q: "What is Greenpeace's perspective on genetic engineering?"

Greenpeace is against the release in the environment of organisms which are products of genetic engineering, as well as to the privatization of life through exclusive patent rights on living organisms, genes or parts of the genome. Genetically mutant (or genetically modified) organisms were released to the environment without there being

any previous or adequate knowledge concerning their effect on the ecosystem, the wild nature and the human health. It must be mentioned though, that Greenpeace is not against the limited use of organisms which are products of genetic engineering, as for medical purposes, in a controlled, bounded environment. Furthermore, Greenpeace believes that the genetic engineering can be a useful tool for the understanding of the function of natural mechanisms, a necessary knowledge on the advancement of organic farming.

Q: What is genetic engineering? Are genetically mutant organisms dangerous? Why isn't genetic engineering similar with the traditional biotechnological techniques for the plant's improvement?

Genetic engineering deals with the extraction of selected genes from an organism (like an animal, a plant, a bacterium or/and viruses), or the composition of copies, and their artificial introduction into other organisms, completely different (like the cultivated plants). These new organisms get some new characteristics, like the resistance to a particular weed-killer. Genetic engineering usually uses genes of viruses for the infiltration and the advancement of the foreign genes, as well as genes of resistance to antibiotics, which function as sign genes. The introduced genes are present in every cell of the plant.

Genetically mutant organisms are **new life forms** that didn't exist beforehand in nature, and, which, in contrast with the traditional forms of biotechnology and plant production, break the natural barriers created between species through millions of years of evolution. **Thus, a fish and a strawberry would never intersect in nature,** but genetic engineering succeeds that in the lab. Scientists extract a gene of a fish and implant it in a strawberry creating a completely new organism. Genetic engineering has the capacity to use genes of animals, plants, even of humans.

When these organisms, which are made by human hands, are let loose on the environment and the food chain, then they start to reproduce themselves. It is a **non-reversible procedure**, that if and when it starts, there is no way to be intercepted. Nobody knows what could be the long-term consequences of the spreading of genetically mutant organisms in the environment.

Q: Is it true that the mutant corpses are dangerous for the health?

The possibility that certain mutant plants could be dangerous for the health is something that can't be excluded. The arbitrary implanting of foreign genes could potentially cause problems to the controlled DNA network of an organism. The foreign gene could, for instance, cause changes to the chemical reactions inside the cells or obstruct the normal cellular function. This could lead onto instability of the implanted genes, to the appearance of new allergies, of toxic effects and onto changes of the nutritional value of the organism.

Plants that are products of genetic engineering contain genes of bacteria, insects and viruses which had never been part of the human diet. Moreover, there is no

information regarding their anaphylactic action. The possibility that the mutant products could cause allergic reactions has not been estimated and controlled.

Furthermore, a lot of the mutant plants which are already cultivated for commercial use contain genes resistant to antibiotics which are targeted to the treatment of diseases to humans as well as to animals. These genes are useless to the cultivation of mutant products and in case that the attribute of resistance to antibiotics is transmitted to bacteria harmful for the human health, the impediment of the successful treatment of various diseases is possible.

Q: Isn't it true that genetic engineering is a technology that can be completely understood, characterized by precision and predictability?

The technology used nowadays in order to achieve the genetic modification of living organisms (i.e. animals and plants) is unrefined and un-precise. The knowledge concerning the consequences of genetic engineering to the DNA and the whole organism is barely minimal. It is also not known how the descendants of the future generations will be influenced. The technology that is today applied to genetic engineering has to do with the implanting of novel genes inside the DNA.
Modern genetics has shown that genes do not work in separation one from another. In contrast, they interact in complex ways, changing their behaviour under the influence of other genes. Despite the fact that a gene can be cut precisely from the DNA of an organism, its introduction to the DNA of another mechanism is completely arbitrary. The result is the rupture of the order of the genes in the chromosome and it is possible to bring about random and unpredictable changes to the cell's function.
DNA is a complex molecule whose exact function is not completely understood. One thing not completely understood yet is how the DNA structure influences the gene's expression. What is nevertheless known is that the position occupied by a gene inside the DNA controls the function of that gene – this is the Position Phenomenon. There is great uncertainty as to the position and the number of the implanted genes, uncertainty that is cleared up only after the application of controls based on the DNA chain.
As a conclusion, the consequences of genetic engineering to the structure of the DNA, the exact function of the genes and their influence to the whole organism are elements that can't be predicted precisely. The supporters of genetic engineering will probably allege that a big part of the DNA is surplus and that the mutant organisms which contain useless implants or those that present important biochemical anomalies will be finally rejected. There is although the danger that a series of biochemical anomalies will be manifested to later stages or even appear several generations later. For many generations the consequences could be unknown. The supporting evidence regarding the way an implanted gene could influence the following generations is scarce.

Q: Isn't it true that genetic engineering is a “green” technology which assists farmers to use less pesticides?

A study based on more than 8.200 experimentally cultivated fields by universities has

demonstrated that in comparison to the farmers who cultivated natural soy varieties those who cultivated mutant soy seeds use two to five times more quantities of pesticides.

The year 1999, 70% of mutant corpses demonstrated resistance to big quantities of pesticides. Regarding these plantations, the use of toxic substances is in fact unavoidable. What are nevertheless, avoided are the techniques that could really spare the farmers from the need to use chemical substances.

Many of the companies of the biotechnological sector try to convince the public that the mutant organisms are environmentally-friendly, hiding at the same time their other purpose which is the rise of the sales of chemical pesticides, which are produced and sold by the same companies.

Q: Isn't it true that the mutant plants are useful in order to ensure food for all the population of the planet?

This is a deeply unsound argument based on the mistaken view that the causes of hunger are due to the gap between the food production and the human population growth. As Jacques Diouf, the Head of the Food and Agriculture Secretariat of the UN, notes: “The Earth produces enough food in order to feed all its inhabitants and could produce even more”.
The recent report of the above organism, titled: “Agriculture in the period 2015-2030”, despite the fact that rejects the genetically mutant organisms reaches the conclusion that the food production will continue to grow until 2030 surmounting the population growth. The report establishes that the real causes of hunger and malnutrition is poverty and the difficulty in access to food.

In the web address www.farmingsolutions.org Greenpeace, Oxfam, and other organizations aiming to the provision of real solutions to the hunger problem cite examples of socially and environmentally sustainable farming methods applied to the whole world and providing safe food which at the same time is enough to feed big population groups.

Q: Isn't it true that the mutant plants will benefit the farmers?

In U.S. and Canada – countries where for 5 at least years there exist this kind of plantations – a coalition of 33 farmers' unions has recently issued an announcement warning that the application of methods of genetic engineering in agriculture has rendered the financial state of small and middle-range farmers all over the U.S.A. extremely uncertain, as well as to other countries of the world.

The companies that are active in the agro-chemicals' field and produce seeds created by genetic engineering demand from the farmers to sign legally binding agreements where it is specified which particular farming method to follow and it is prohibited to save seeds. Moreover, the farmers have to pay exclusive rights to the companies.

The consequence is that companies like Monsanto sue those farmers that they believe are using the company's products (mutant seeds) without having signed the relevant agreements. In fact, due to cross-pollination, many farmers unfortunately trace mutant plants in their fields. This is happening regardless if the farmers wanted or not to cultivate such plants. The mutant organisms are live organisms, they can propagate, they can move (e.g. on the pollen, on insects), resulting to their spreading without being a way to withdraw them when we find out their negative consequences.

In Canada, Monsanto sued Percy Schmeiser, a cole seed farmer, because in his field was traced mutant cole seed, which had grown there as an outcome of cross-pollination. In fact, despite Schmeiser never wanted the cross-pollination, Monsanto went to the court and managed to prove that in any case the farmer should pay the company off.

The farmers following conventional methods have discovered that the mutant corpses in nearby fields have turned out to weeds, not removable by using weed-killers, exactly because genetic engineering has accorded a great resistance to them. Regarding Canada, the Royal Society – one of the oldest and foremost distinguished scientific unions – warns that huge cultivated stretches of the land have been infected by cole seed weeds which are resistant to the killers, whose combat will economically burden the farmers.

The farmers in U.S.A. and Canada, when they finish their crop, are facing another problem concerning the plantations of mutant plants, namely that the foreign markets are not disposed to import products of that kind of farming. In Canada, an outcome of the growing of mutant cole seed was the downright fall of its exports to Europe. The same has happened with the corn from the U.S.A., which isn't sold to Europe any more and has been excluded by important Asian markets.

Q: Is genetic engineering the only solution for agriculture?

The application of genetic engineering to agriculture is suggested as the only solution to the present day impasse (widespread use of insecticides, undermining of the flora and the fauna, decrease of biodiversity, soil corruption, etc). The known facts until now don't justify the slightest optimism. On the contrary, the presentation of genetic engineering as a solution to the present day impasse of the agriculture is stopping the advancement of the only economically and environmentally sustainable model, the organic farming. A comparison between the research grants accorded to genetic engineering and the grants accorded for research on the organic combat of diseases shows that, despite the public's strong reaction, the application of genetic engineering is still advanced by companies, governments and scientists. Unfortunately, this perspective is cancelling any serious effort to advance organic agriculture, through stable steps that will secure the marketing of local products, local varieties, the decline in pesticide use, etc.

Q: What are the Bt products? Is it true they are dangerous?

The Bt products are designed in order to have insecticide action. These products are manufactured with the method of the insertion of a synthetic gene from the naturally produced bacterium of *Bacillus thuringiensis* (known as the Thuringian Bacillus or Bt) so that these plants will produce their own toxins Bt and exterminate parasites. Corn, cotton and potatoes are already cultivated widely and are designated for commercial use (especially in the U.S.A.) while there are more Bt products for the time being evolving in the lab (cole seed, rice, tomatoes, etc.)

There is evidence backing the opinion that the hurry in order for the Bt products to be promoted to the market is entangling serious danger for the environment and the human health. Scientists who work for various European governments believe that the genes of mutant corn produced by the multinational corporation Syngenta and especially those that enhance the resistance to antibiotics pose a great danger for the human and animal health as well as to the environment. Moreover, according to a plethora of scientific evidence, the Bt corn is suggested to have negative consequences both to the target insects (a growth of the insects' endurance) and to useful insects.

Q: What is the "golden rice"? Isn't it true that its use saves from sight loss those children that suffer from vitamin A deprivation?

It is a variety which has undergone treatment in order to produce pro-vitamin A. The supporters of the product persist that this particular variety of mutant rice will aid in the battle of the lack of vitamin A – a deprivation that could lead to loss of eye-sight – in the developing countries.

According to the researchers leading this particular programme, the above rice variety is ready for cultivation. But the word "ready" doesn't imply the necessary knowledge regarding the consequences of the product to the environment and the health. In fact, the "golden rice" is a lab product which hasn't passed the necessary tests while the arguments about its contribution to the battle against various health problems are either characterised by excessive optimism, or exist between wishful thinking and fantasy.

The "golden rice" is not a solution to the root causes of vitamin A deprivation, which are poverty and the inability to acquire a diet with bigger variety and adequate quantities of vitamin A. In contrast, it is a technical and frivolous method of treatment, which hasn't been tested and it is probable to cause new problems. Moreover, the logic of single crop-farming which characterises the production of mutant rice, may well lead to grave nutritional problems.

The possible large-scale production of "golden-rice" could further aggravate the malnutrition problems and finally undermine the proper nutrition, having in mind that it promotes a diet based on a sole product and not on the reintroduction of multi-vitamin vegetable foods which were until recently cheap and abundant. The mutant food will cause a bundle of problems concerning the lack of other ingredients – not only of the vitamin A – necessary for the nutrition of an organism.

Q: Are mutant products safe?

The information concerning the safety of mutant foods, almost in its entirety, comes from research taken by the industries which promote the mutant organisms. As it is expected, the value and worth of these checks raise serious doubts since the companies manufacturing the mutant organisms have spent billions of dollars and are under the pressure of a fast amortization of their investment. It is obvious that long-term independent studies and tests are needed to see if we could be sure about the safety of the mutant foods. Another worry deals with the possibility of the increase and acceleration of the growth of endurance of the pathogenics in antibiotics, due to the use of similar genes in mutant organisms and foods.

In our country worries have already been expressed for the possibility of the appearance of new allergies (Medical Association of Salonica, 2001). In the same time, the studies for the consequences of mutant products (used in provender) for the animals are very few. There are some scientists that ask for the application of precautionary principles like the prohibition of the cultivation of mutant organisms. There are cases of scientists that were fired just after they announced the results of research according to which the use of mutant organisms would have negative outcomes.

Q: Is it true that Greepeace is against the application of methods of genetic engineering to medicine?

Greenpeace is specialised in environmental issues and has focused its attention to the dangers concerning the release of genetically mutant organisms in the environment.

The uses of genetic engineering in medicine differs from its use in agriculture and aquaculture where there is widespread release to the environment of mutant organisms. In contrast to farming applications, in medicine the use of mutant organisms is controlled (in space and time) and it is done with the consent of the interested person (eg. the patient). In the medical field, genetic engineering is used for the creation of new medicine and the application of new testing methods. This use of genetic engineering is normally not associated with the use of genetically mutant organisms and their release to the environment.

In the same time, the progress in molecular biology contributes to the better understanding of the natural environment and the advancement of medicine. Especially for the medicine there is the possibility of finding new methods of diagnosis and treatment of grave illnesses.

Consequently, Greenpeace is not against the use of genetic engineering to the medical field. Nevertheless, it believes that those studies and applications should take place in seclusion so that we avoid the release to the environment of mutant organisms, from which new drugs and hormones are produced. Such organisms entail great dangers to the human health, the wild nature and the eco-systems.

Q: Is Greenpeace against progress?

Of course not. Why should we be? Progress means the changes to the best. The changes to the worst are steps backwards. We must make sure that the mutant plants and products are safe and that they offer benefits to the environment, to the consumers and the farmers, before they get to our dishes. We must not abide to a disputable technology, whose applications may have unpredictable and mostly, irreversible, outcomes.

2. Γενετικά Τροποποιημένοι Οργανισμοί (μεταλλαγμένα)

Τι είναι τα μεταλλαγμένα

Τα μεταλλαγμένα είναι προϊόντα των εταιρειών Γενετικής Μηχανικής. Στα εργαστήριά τους, επεμβαίνουν και τροποποιούν κατά βούληση, το γενετικό υλικό (DNA) των ζωντανών οργανισμών με συγκεκριμένες τεχνικές.

Ετσι, αναμιγνύουν επιλεγμένες μονάδες γενετικού υλικού εντελώς διαφορετικών ειδών (π.χ. φυτών και ζώων), κατασκευάζοντας τελικά νέους οργανισμούς με εν δυνάμει επιθυμητές ιδιότητες.

Για ποιο λόγο γίνεται αυτό;

Οι υπέρμαχοι της γενετικής μηχανικής υποστηρίζουν ότι τα μεταλλαγμένα φυτά και τα τρόφιμα που παράγονται από αυτά, προσφέρουν πολλά πλεονεκτήματα και μπορούν να συμβάλλουν αποτελεσματικά στην πρόοδο της ανθρωπότητας.

Ετσι υπόσχονται καταπολέμηση των ασθενειών των φυτών και των ζιζανίων με λιγότερα φάρμακα και ζιζανιοκτόνα και άρα "προστασία του περιβάλλοντος", καλύτερη παραγωγή, μεγαλύτερα αγροτικά εισοδήματα και αντιμετώπιση της πείνας.

Κι όμως… κανένα από τα μεταλλαγμένα κατασκευάσματα που κυκλοφορεί στην αγορά δεν δικαιολογεί τους παραπάνω ισχυρισμούς. Αντίθετα, συντριπτικά στοιχεία αποδεικνύουν ότι πίσω από αυτά τα προσωπεία της ανθρωπιάς, της φιλοαγροτικής καθώς και της περιβαλλοντικής πολιτικής, κρύβονται καλά οργανωμένα σχέδια των πολυεθνικών των μεταλλαγμένων, που μέσα από τα δικαιώματα της πατέντας στοχεύουν σε μυθικά κέρδη και στον έλεγχο της παγκόσμιας παραγωγής τροφίμων.

Σύμμαχοι σε αυτήν τη στυγνή προσπάθεια των πολυεθνικών, με επιμέρους οφέλη, φαίνονται να είναι η συντριπτική πλειοψηφία των κυβερνήσεων των αναπτυγμένων χωρών, ο Παγκόσμιος Οργανισμός Εμπορίου, και τελικά το ισχύον νομοθετικό πλαίσιο της Ε.Ε. με τις αντιφάσεις που το χαρακτηρίζει.

Μεταλλαγμένα = Ανυπολόγιστο ρίσκο

Πολλοί ανεξάρτητοι επιστήμονες και ερευνητές έχουν καταγράψει αρνητικές συνέπειες από την παραγωγή και χρήση των μεταλλαγμένων προϊόντων της βιοτεχνολογίας. Έτσι τα μόνα που αντικειμενικά μπορεί να μας υποσχεθεί το πολυεθνικό λόμπι της Γενετικής Μηχανικής είναι:

<u>Για το φυσικό Περιβάλλον</u>

1. Αμεση υποβάθμισή του, από την αυξημένη τελικά -και παρά τις αντίθετες υποσχέσεις- χρήση χημικών στις καλλιέργειες και τη μεγαλύτερη συνεπώς ρύπανσή του

2. Προοπτικά, τη μη αντιστρεπτή καταστροφή του:
Μέσω των ανέμων, της αναπόφευκτης σταυρογο-νιμοποίησης, της ανεξέλεγκτης μεταφοράς γύρης από γυρεοσυλλεκτικά έντομα και της τυχαίας εν-σωμάτωσης των γονιδίων Φρανκεστάϊν σε εντε-λώς άσχετους οργανισμούς, προκαλείται ένα διαρ-κώς αυτοτροφοδοτούμενο καταστροφικό γαϊτανάκι.

Αυτό έχει ως επακόλουθο:
- τη δευτερογενή εισαγωγή ελαττωματικών γονιδίων στην παγκόσμια γενετική

δεξαμενή,
- την εξασθένιση των ειδών
- την εμφάνιση και διάδοση νέων παρασίτων, και-νούριων ανθεκτικότερων ζιζανίων και νέων ασθενειών που υπερβαίνουν το φυσικό φράγμα των ειδών
- την απώλεια βιοποικιλότητας
- την πτώση της εδαφικής γονιμότητας,
ή αλλιώς, μια δυναμικά εξελισσόμενη Γενετική ρύπανση με κύριο χαρακτηριστικό τις διαταραχές και την ανισορροπία των οικοσυστημάτων σε παγκόσμια κλίμακα.

Για τη Δημόσια Υγεία

1. Μεγαλύτεροι κίνδυνοι από την αυξημένη τελικά χρήση χημικών στις καλλιέργειες, με περισσότερα και βαρύτερα περιστατικά δηλητηριάσεων, προβλημάτων αναπαραγωγής, καρκίνων κ.λπ..

2. Δυσμενείς επιδράσεις λόγω κατανάλωσης νέων αφύσικων τροφίμων με
- την εισαγωγή νέων τοξινών και αλλεργιογόνων
- την ανοχή στα αντιβιοτικά και τη μειωμένη ανταπόκριση του ανοσοποιητικού συστήματος
- άλλες άγνωστες τελικά παρενέργειες:
(Οι Γ.Τ.Ο. μπορούν να αντέξουν στη δράση των γαστρικών υγρών του πεπτικού συστήματος και μέσω της εντερικής χλωρίδας να περάσουν και να επηρεάσουν κάθε κύτταρο του οργανισμού προκαλώντας μη αντιστρεπτές μεταλλάξεις στα φυσιολογικά γονίδια που μπορεί να οδηγήσουν σε νέες –άγνωστες- γενετικές ασθένειες ή καρκίνους. Οι παρενέργειες μπορούν να περάσουν στους απογόνους και σε όλες τις επόμενες γενιές).

Οι επιπτώσεις από την καλλιέργειά τους στη Δημόσια Υγεία και στο περιβάλλον είναι ανυπολόγιστες και μη αναστρέψιμες. Αν απελευθερωθούν, δεν υπάρχει δυνατότητα απόσυρσης.

ΤΑ ΑΠΕΛΕΥΘΕΡΩΜΕΝΑ ΜΕΤΑΛΛΑΓΜΕΝΑ ΓΟΝΙΔΙΑ
ΔΕΝ ΑΝΑΚΑΛΟΥΝΤΑΙ ΚΑΙ ΔΕΝ ΑΝΑΧΑΙΤΙΖΟΝΤΑΙ
ΑΛΛΑ ΑΝΑΠΑΡΑΓΟΝΤΑΙ

Οι σπόροι βρίσκονται στην αρχή της αλυσίδας των τροφίμων. Αν επιτραπεί να καλλιεργηθούν μεταλλαγμένες ποικιλίες:

· Θα απαιτηθούν περισσότερα ζιζανιοκτόνα για να αντιμετωπιστούν τα νέα πιο ανθεκτικά ζιζάνια
· Θα υπάρξουν επιπτώσεις στην αγροτική παραγωγή π.χ. με την αναστολή πολύτιμων μικροβιακών λειτουργιών του εδάφους –αζωτοδέσμευση.
· Οι αγρότες που δεν θα τις θέλουν, θα χάσουν το δικαίωμα να παράγουν καθαρά προϊόντα, λόγω της επιμόλυνσης
· Ακόμη, δεν θα ξέρουν αν έχουν παράγει μεταλλαγμένα και δεν θα μπορούν να δώσουν τις σχετικές εγγυήσεις στους πελάτες τους. (Ήδη πολλές αλυσίδες τροφίμων απαιτούν καθαρά προϊόντα. Το ίδιο ισχύει και για τις ζωοτροφές).

· Οι βιοκαλλιεργητές θα αναγκαστούν να εγκαταλείψουν τη δουλειά τους και η Ελλάδα θα χάσει ένα μεγάλο συγκριτικό πλεονέκτημα στη διεθνή αγορά.
· Θα αφανιστούν οι μικρομεσαίοι παραγωγοί και θα πραγματωθεί η εφιαλτική προοπτική του ελέγχου των σπόρων από λίγους. Οι εναπομείναντες αγρότες θα είναι υπό καθεστώς υποτέλειας απέναντι στις πολυεθνικές, μέσω των δικαιωμάτων ευρεσιτεχνίας που θα επιβληθούν
· Η ραγδαία αύξηση των κοινωνικών ανισοτήτων θα είναι γεγονός
· Και βέβαια, η διασπορά των μεταλλαγμένων στο περιβάλλον θα εξαφανίσει τη βιοποικιλότητα με ολέθριες συνέπειες στη Φύση και στον άνθρωπο.

Ολοι μας τελικά, φαίνεται να συμμετέχουμε χωρίς τη θέλησή μας, στο μεγαλύτερο πείραμα που έγινε ποτέ στον πλανήτη με ανεξέλεγκτα αποτελέσματα και ανυπολόγιστους κινδύνους
Θα το επιτρέψουμε να υλοποιηθεί;

ΤΟ ΛΟΓΟ ΕΧΕΙ Η ΚΟΙΝΩΝΙΑ ΤΩΝ ΠΟΛΙΤΩΝ
ΚΙ ΟΧΙ "Η ΕΠΙΣΤΗΜΗ" ΤΩΝ ΠΟΛΥΕΘΝΙΚΩΝ

Genetically modified organisms (mutants)
What are the mutants:

The mutants are products of the companies of Genetic Engineering. In their laboratories, they intervene and modify on will, the genetic material (DNA) of the living organisms using particular techniques.
In that way, they mix specific units of genetic material of completely different species (e.g. of plants and animals), manufacturing finally new organisms with potentially desirable qualities.

For what reason is this happening?
The supporters of genetic engineering argue that the mutant plants and the foods produced by them, offer many advantages and could contribute efficiently in the progress of humanity.

So, they promise the combat of plant diseases and weeds using less insecticides and

weed-killers, thus the “protection of the environment”, better crops, bigger farmer's incomes and the confrontation of hunger.

Nevertheless... none of the mutant products out on the market does not justify the above allegations. On the contrary, overwhelming evidence proves that behind the facets of humanity, of farmers'-friendly and environmental policy, there are lurking well-organised plans of the multinationals (companies) of mutants, which through the rights of the patents aim to mythical profits and the control of the global food production.

Allies to that brutal effort of the multinationals, with side benefits, seem to be the over-whelming majority of the governments of the developed countries, the World Trade Organisation, and finally the present legislative context of the E.U. with the contradictions characterising it.

Mutants = incalculable risk

Many independent scientists and researchers have put down the negative consequences of the production and use of mutant products of biotechnology. Thus, the only things the multinational lobby of Genetic Engineering could objectively promise us is:

For the natural Habitat (environment)

1. Immediate degradation, from the finally increased – despite all the opposite promises – use of chemicals in the plantations and bigger pollution for it.
2. In the future, its irreversible destruction:

From the winds, the inevitable cross-pollination, the uncontrollable spreading of pollen from the pollen- collecting insects and from the arbitrary incorporation of Frankenstein genes in completely irrelevant organisms, a continuously self-feeding destructive circle is created.

As an outcome, there is:

- the secondary introduction of faulty genes in the global genetic reserve
- the degradation of species
- the appearance and spreading of new parasites, new and more resistant weeds and diseases that overcome the natural barrier of species
- the loss of biodiversity
- the decrease of soil fertility

or, else, a dynamically evolving Genetic pollution with its central characteristic the disorders and the imbalance of the ecosystems in a global scale.

For the Public Health

1. Greater dangers from the finally increased use of chemicals in the plantations, with more and heavier instances of poisonings, reproduction problems, cancers, etc.
2. Adverse consequences due to the consumption of new unnatural foods with

- the introduction of new toxins and allergenics
- the tolerance to antibiotics and the decreased response of the immune system
- other so far unknown consequences

(the GMOs can resist the action of abdominal fluids of the digestive system and through the intestinal flora pass through and affect every cell of the organism causing

irreversible mutations to the ordinary genes which could lead to new – unknown – genetic illnesses or cancers. The side-effects could pass on to the offsprings and to all future generations).
The outcomes in Public Health and the environment of their cultivation cannot be estimated and are irreversible. If they are released, there is no possibility of withdrawal.

THE RELEASED MUTANT GENES CANNOT BE WITHDRAWN NOR INTERCEPTED BUT THEY REPRODUCE

The seeds are in the beginning of the food chain. If mutant varieties are allowed to be cultivated:

- More weed-killers will be needed to face the new more resistant weeds
- there will be consequences to the farm production for instance by the stopping of useful microbial functions of the soil – nitrogen blocking.
- the farmers who don't want them, will lose their right to produce clean products, due to cross-pollution
- Moreover, they won't know if they have produced mutants and they won't be able to give the necessary reassurances to their customers. (A lot of the grocery chain-stores demand clean products. The same thing applies to the animal foods)
- the organic farmers will have to leave their jobs and Greece will lose one big comparative advantage to the international market.
- The small-scale producers will be lost and the nightmare of the seeds' control by a few will be realised. The rest of the farmers will be in a state of submission to the multinational companies, through the patent rights which will be imposed.
- The cumulative rise of social inequalities will be a fact.
- Of course, the release of mutants in the environment will erase the biodiversity with lethal outcomes for Nature and the humans.

All of us, finally, seem to take part against our will, to the biggest experiment ever to happen in the planet, with uncontrollable outcomes and dangers that cannot be estimated.
Will we let this happen?

THE CIVIL SOCIETY HAS THE RIGHT TO SPEAK AND NOT THE MULTINATIONAL “SCIENCE”

Η μεταλλαγμένη απειλή

Η γενετική μηχανική, παρεμβαίνοντας στο γενετικό υλικό (DNA) και παραβιάζοντας την εξελικτική διαδικασία, προσπαθεί να μας μετατρέψει παρά τη θέλησή μας σε πειραματόζωα στο μεγαλύτερο πείραμα που έγινε ποτέ στον πλανήτη. Από το 1997, το δίνουμε ένα σκληρό και πολύπλευρο αγώνα ενάντια στις πολυεθνικές των μεταλλαγμένων. Μέσα από εκστρατείες ενημέρωσης των καταναλωτών, με δειγματοληπτικούς ελέγχους σε τρόφιμα και σπόρους και με δυναμικές ενέργειες σε αρμόδιους φορείς και εταιρίες, αγωνιζόμαστε για να γνωρίζουμε τι τρώμε και να διατηρήσουμε τη βιοποικιλότητα του πλανήτη. Χάρη στην εκστρατεία μας αυτή, η Ελλάδα κατέχει μια παγκόσμια, θετική πρωτιά: από το Νοέμβριο του 2003 που ξεκίνησε η εκστρατεία μας για την ανακήρυξη της χώρας μας σε Ζώνη Ελεύθερη από Μεταλλαγμένα, μέσα σε δέκα μήνες (Σεπτέμβριος 2004), όλες οι νομαρχιακές αυτοδιοικήσεις της χώρας μας ψήφισαν ενάντια στην καλλιέργεια των μεταλλαγμένων και ανακηρύχθηκαν σε Ζώνες Ελεύθερες από Μεταλλαγμένα. Στόχος μας είναι η νομική κατοχύρωση της απόφασης αυτής, ώστε να είναι πρακτικά αδύνατο να εισαχθούν και να καλλιεργηθούν μεταλλαγμένα στη χώρα.

Οι μεταλλαγμένοι οργανισμοί μπορούν να διασταυρωθούν με φυσικούς οργανισμούς και να αναπαραχθούν, να μεταναστεύσουν και να μεταφερθούν, με απρόβλεπτες και ανεξέλεγκτες συνέπειες. Η απελευθέρωση των μεταλλαγμένων οργανισμών στο περιβάλλον είναι μια μη αντιστρεπτή διαδικασία: δεν υπάρχει τρόπος να τους "αποσύρουμε" όταν διαπιστώσουμε τις όποιες αρνητικές επιπτώσεις τους. Η γενετική ρύπανση αποτελεί ίσως τη μεγαλύτερη απειλή για το φυσικό περιβάλλον και τη βιοποικιλότητα.

Εκατομμύρια πολίτες, επιστήμονες και οργανώσεις σε όλο τον κόσμο είναι **αντίθετοι** με την απελευθέρωση των μεταλλαγμένων οργανισμών στο περιβάλλον και τη χρήση τους στα τρόφιμα και ανησυχούν για τις πιθανές επιπτώσεις.

Τα γενετικά μεταλλαγμένα προϊόντα δεν είναι πιο γευστικά, πιο θρεπτικά, πιο φθηνά ή πιο αποδοτικά από τα φυσικά. Δημιουργούνται, παράγονται και προωθούνται στην αγορά με μοναδικό κριτήριο το οικονομικό συμφέρον των πολυεθνικών των μεταλλαγμένων.

Οι πολυεθνικές των μεταλλαγμένων πιέζουν για τη μαζική απελευθέρωση των προϊόντων τους και τη χρήση στην τροφική αλυσίδα. Οι εταιρίες αλλά και οι κυβερνήσεις που προωθούν τα μεταλλαγμένα επιδιώκουν να σταματήσουν κάθε προσπάθεια για τον περιορισμό των προϊόντων τους και για τη δημιουργία νομοθεσίας που θα ελέγχει τους μεταλλαγμένους οργανισμούς και θα δίνει τη δυνατότητα τόσο στους καταναλωτές όσο και στους αγρότες να επιλέξουν. Και ο λόγος είναι απλός: η συντριπτική πλειοψηφία των καταναλωτών καθώς και αγρότες σε όλο τον κόσμο είναι εντελώς αντίθετοι στην απελευθέρωση μεταλλαγμένων οργανισμών στο περιβάλλον και στη χρήση τους στα τρόφιμα.

The mutant threat

Genetic engineering, by intervening to the genetic material (DNA) and violating the evolutionary procedure, is trying to turn us despite our will into lab animals for the biggest experiment that ever happened on the planet. Since 1997, we are giving a hard and multi-faceted struggle against the multinationals of the mutants. Through information campaigns of the consumers, sampling tests in food and seeds and dynamic actions in the appropriate agencies and companies, we are fighting to know what we are eating and to sustain the biodiversity of the planet. Due to our campaign, Greece has a world first: since November of 2003 when our campaign started for the designation of our country into a Mutant-Free Zone, in 10 months (September 2004), every Prefecture government of our country has voted against the cultivation of mutants and they have been designated Mutant Free Zones. Our aim is the legal entrenchment of that decision, so that it would be practically impossible to import and cultivate mutants in the country.

The mutant organisms can cross-breed with natural organisms and reproduce, migrate and transfer, with improbable and uncontrollable consequences. The release of mutant organisms in the environment is an irreversible procedure: there is no way to "withdraw" them when we discover whatever their negative consequences are. Genetic pollution constitutes perhaps the biggest threat to the natural environment and biodiversity.

Millions of citizens, scientists and organizations form all over the world are against the release of mutant organisms to the environment and their use in foods and they worry for possible consequences.

The genetically mutant products are not tastier, more nutritious, cheaper or more profitable that the natural ones. They are created, produced and promoted in the market on the sole reason of the financial interest of the multinationals of the mutants.

The multinationals of the mutants are pressuring for the large-scale release of their products and the use in the food chain. The companies, but also the governments promoting the mutants are aiming to stop every effort for the limitation of their products and the establishment of a legislation that would control the mutant organisms and will give the opportunity to the consumers as well as to the farmers to choose. The reason is simple: the overwhelming majority of the consumers as well as the farmers all over the world are completely against to the release of mutant organisms to the environment and their use in foods.

Αντισταθείτε στο νόμο Σουφλιά
που βάζει τα μεταλλαγμένα στην Ελλάδα

(όποιος θέλει να ζήσει πρέπει να μιλήσει τώρα)

Η αιφνιδιαστική απόφαση του Υπουργού ΠΕΧΩΔΕ κ. Σουφλιά για την ενσωμάτωση της Ευρωπαϊκής Οδηγίας 18/2001 (και των κανονισμών της 1829-1830/2003) με τίτλο : "Σκόπιμη απελευθέρωση των Γ.Τ.Ο. στο περιβάλλον" στο εθνικό δίκαιο συνιστά απροκάλυπτα κήρυξη πολέμου εναντίον της ελληνικής κοινωνίας, του φυσικού περιβάλλοντος, του πολιτισμού μας και του Συντάγματός μας.

Ο απειλητικός εφιάλτης των μεταλλαγμένων που πλανιόταν επί μήνες και χρόνια πάνω από την πατρίδα μας, με το "νόμο Σουφλιά" παίρνει σάρκα και οστά. Ολόκληρη η Οδηγία που με την Υπουργική Απόφαση καθίσταται νόμος του ελληνικού κράτους, αποτελεί ένα ολοκληρωμένο μηχανισμό Νομικής προστασίας της εισόδου, της καλλιέργειας και της εμπορίας των μεταλλαγμένων στην πατρίδα μας.

Η κυβέρνηση αντί να απαγορεύσει με εθνικό δίκαιο την είσοδο, διακίνηση και καλλιέργεια των μεταλλαγμένων, αντί να προστατεύσει την υγεία του Ελληνα πολίτη, την ελληνική φύση και την ελληνική γεωργία, υποκύπτει με επονείδιστο τρόπο και επικυρώνει ως εθνικό δίκαιο την Ευρωπαϊκή Οδηγία. Κάνει έτσι για πρώτη φορά νόμιμο καθεστώς την εφιαλτική παρουσία των μεταλλαγμένων στην Ελλάδα, με ότι αυτό συνεπάγεται. Η Οδηγία που επικύρωσε η κυβέρνηση με υπουργική απόφασή της θυσιάζει στην αρχή του ανταγωνισμού και στα κέρδη λίγων εταιρειών κάθε ηθική και κοινωνική αρχή όπως η **"Αρχή της προφύλαξης"** η **"Δημοκρατική αρχή"** και η **"Αρχή της κυριαρχίας"** του Ελληνικού κράτους. Θυσιάζει τελικά το ίδιο το Σύνταγμά μας μετατρέποντας τους Ελληνες σε πειραματόζωα και την ελληνική κοινωνία και φύση σε πειραματικό πεδίο με ανυπολόγιστο ρίσκο.

Το "μορατόριουμ" είχε επιφέρει έναν αδικαιολόγητο εφησυχασμό στους πολίτες της Ευρωπαϊκής Ένωσης και είχε αφ' ετέρου δώσει τον καιρό στα «λόμπι» των εταιριών να διαβρώσουν κρατικές υπηρεσίες, θεσμούς, πανεπιστήμια και κοινωνικούς φορείς που φυσιολογικά αποτελούν την πρώτη γραμμή άμυνας της κοινωνίας απέναντι στην απειλή των μεταλλαγμένων. Ολοι αυτοί αξιοποιούνται σήμερα για την πλήρη ανάπτυξη της στρατηγικής του εφησυχασμού των πολιτών απέναντι στην εισβολή των μεταλλαγμένων (νόμος Σουφλιά). Ιδιαίτερα επικίνδυνο ρόλο παίζουν σήμερα ορισμένες μη κυβερνητικές οργανώσεις που έχουν πεισθεί εκούσες άκουσες ότι κάθε αγώνας είναι μάταιος και επιχειρούν να συμμετέχουν στη διαχείριση της εισόδου των μεταλλαγμένων. Παρόλα τα ακροβατικά επιχειρήματα και τις κορώνες εναντίον των μεταλλαγμένων, οι πολίτες γρήγορα θα διαπιστώσουν ότι οι κύριοι αυτοί ουδέποτε τόλμησαν να μιλήσουν για την «ταμπακέρα» που είναι η σαφής απόρριψη της Ευρωπαϊκής Οδηγίας και η θέσπιση Εθνικού Δικαίου πλήρους απαγόρευσης των μεταλλαγμένων.

Σήμερα που οι εταιρείες των μεταλλαγμένων εγκαθίστανται με νόμιμο τρόπο στην πατρίδα μας, απειλώντας με πρωτοφανή τρόπο ελληνική κοινωνία, φύση και πολιτισμό, κανένας δεν μπορεί να αποφύγει τις ευθύνες του.

Επιστημονικοί σύλλογοι, κόμματα, εκκλησία, Δικαστική εξουσία και πολίτες καλούνται να πουν το μεγάλο ΟΧΙ στην πρωτοφανή απειλή. Διαφορετικά θα είναι υπόλογοι απέναντι στις γενιές των Ελλήνων που έρχονται.

Απαιτούμε εδώ και τώρα την ακύρωση της Υπουργικής Απόφασης που ενσωματώνει την Οδηγία 18/2001 στο Εθνικό μας Δίκαιο.

Να απομακρυνθούν από τη χώρα μας ή να καταστραφούν άμεσα όσα Γ.Τ. προϊόντα έχουν εισαχθεί ή έχουν παραχθεί νόμιμα ή παράνομα σ΄αυτή.

Να απαγορευτεί πλήρως κάθε εισαγωγή, διακίνηση ή εμπορία Γ.Τ.Ο. στη χώρα μας.

Να απαγορευτεί πλήρως στη χώρα μας κάθε μορφής καλλιέργεια Γ.Τ.Ο.

Να κατοχυρωθεί θεσμικό πλαίσιο άμεσου κοινωνικού ελέγχου για την πλήρη απαγόρευση καλλιέργειας, εμπορίας και διακίνησης των Γ.Τ.Ο. στην επικράτειά μας.

ΑΓΩΝΙΣΤΕΙΤΕ, ΥΠΟΣΤΗΡΙΞΤΕ ΤΗΝ ΠΑΝΕΛΛΑΔΙΚΗ ΚΙΝΗΣΗ ΚΑΤΑ ΤΩΝ ΜΕΤΑΛΛΑΓΜΕΝΩΝ ΓΙΑ ΤΟ ΜΕΛΛΟΝ ΤΩΝ ΠΑΙΔΙΩΝ ΣΑΣ

ΚΑΝΕΝΑΣ ΕΛΛΗΝΑΣ ΠΟΛΙΤΗΣ ΠΕΙΡΑΜΑΤΟΖΩΟ ΤΩΝ ΠΟΛΥΕΘΝΙΚΩΝ

ΚΑΤΑΡΓΗΣΗ ΕΔΩ ΚΑΙ ΤΩΡΑ ΤΟΥ ΝΟΜΟΥ ΣΟΥΦΛΙΑ

Λέμε ΟΧΙ στα μεταλλαγμένα...

Γιατί:

· Αποτελούν μια πρωτοφανή απειλή για τη φύση και την κοινωνία.
· Αποτελούν κίνδυνο για την ανθρώπινη υγεία και τη βιοποικιλότητα με μη αναστρέψιμες συνέπειες.
· Ισοπεδώνει τους τοπικούς διατροφικούς πολιτισμούς και οδηγεί στον έλεγχο της διατροφής του πλανήτη από μια χούφτα πολυεθνικών.

Απορρίπτουμε:

Το θεσμικό πλαίσιο που εφαρμόζει και ρυθμίζει την αποδοχή, την παρουσία, την διακίνηση και την καλλιέργεια των Γενετικά Τροποποιημένων Οργανισμών σε αντίθεση με τις αρχές της Δημοκρατίας και της Προφύλαξης

Απαιτούμε:

Από την Ελληνική πολιτεία να κάνει πράξη τη συντριπτική θέληση του ελληνικού λαού και να ψηφίσει εκείνο το νομικό πλαίσιο που απορρέει από την αρχή της Δημοκρατίας, την αρχή της Κυριαρχίας και την αρχή της Προφύλαξης

όπως αυτές αναφέρονται στο Διεθνές Πρωτόκολλο Βιοασφάλειας της Καρθαγένης και που θα απαγορεύει την είσοδο, τη διακίνηση και την καλλιέργεια των Γ.Τ.Ο. στη χώρα μας.

Resist to Souflias' legislation act that introduces mutants in Greece
(whoever wants to live must speak up now)

The sudden decision of the minister of Environment, Urban Planning and Public Constructions to incorporate into the national legislation the European Directive 18/2001 (and the rules of 1829-1830/2003) bearing the title: "Deliberate Release of G.M.Os to the environment" constitutes an outright proclamation of war against the Greek society, the natural environment, our civilisation and our Constitution.

The threatening nightmare of mutants which was wandering for months and years over our home country, under "Souflias legislation act" is taking flesh. The whole Directive which, under the minister's decision, is rendered law of the Greek state, constitutes a complete mechanism of Legal protection of the introduction, the cultivation and the trade of mutants in our home country.

The government, instead of banning under national law the introduction, circulation and cultivation of the mutants, instead of protecting the health of the Greek citizens, the Greek nature and the Greek agriculture, is succumbing in a disgraceful way and ratifies as national law the European directive. In that way, it accords legal status to the nightmarish presence of mutants in Greece, whatever this implies. The Directive the government ratified on a ministerial decision is sacrificing to the principle of antagonism and to the profits of a few companies every moral and social principle, like the **"Principle of Caution"**, the **"Democratic Principle"** and the **"Principle of Sovereignty"** of the Greek state. It is finally sacrificing even our own Constitution, turning the Greeks into lab animals and Greek society and nature into an experimental field with incalculable risk.

The "moratorium" had brought about an unjustified enthusiasm to the citizens of the European Union and, on the other side, had given time to the "lobbies" of the companies to corrupt the governmental agencies, the institutions, the universities and the social agents who would normally be the first line of society's defence against the threat of mutants. All these are today utilized for the full advancement of the strategy of the citizens' complacency facing the invasion of the mutants (Souflias legislation act). Especially dangerous is the role taken today by some non-governmental organizations who have been convinced, willy-nilly, that every struggle is futile and they try to take part in the management of the introduction of the mutants.
Despite all the acrobatic arguments and the high tones against the mutants, the citizens will soon find out that these gentlemen at no time dared speak about the vexed issued ("ταμπακερα") which is the outright refute of the European Directive and the enactment of a National Law fully banning the mutants.

Now that the companies of the mutants are legally settling down in our country, threatening in an unprecedented way the Greek society, nature and civilisation, nobody can avoid their responsibilities.

Scientific associations, political parties, the church, the Judicial system and the citizens are asked to say the big NO to the unprecedented threat. In another way, they will be accountable to the generations of Greeks to come.

We are demanding here and now the cancellation of the Ministerial Decision that incorporates the Directive 18/2001 to our National Legislation.
All the G.M.O. products imported legally or illegally **must be removed from our country or destroyed.**
Any import, circulation and trade of G.M.Os in our country **must be completely banned.**
Any kind of cultivation of G.M.Os **must be completely banned.**
An institutional frame of direct social control for the complete ban of cultivation, trade and circulation of G.M.Os in our territory **must be set**.

STRUGGLE, SUPPORT THE PAN-HELLENIC MOVEMENT AGAINST MUTANTS FOR THE FUTURE OF YOUR CHILDREN

NO GREEK CITIZEN LAB ANIMAL FOR THE MULTINATIONALS
IMMEDIATE REPEAL OF SOUFLIAS LEGISLATION ACT

We say NO to mutants...
Because:

3. **They constitute an unprecedented threat for nature and society**
4. **They constitute a danger for the human health and biodiversity with irreversible consequences**
5. **It is bulldozing the local nutritional civilisations and leading to the control of the planet's diet from a bunch of multinationals.**

6. **We are rejecting:**

The institutional frame applying and regulating the acceptance, presence, circulation and the cultivation of Genetically Modified Organisms contrasting the principles of Democracy and Caution

We demand:

From the Greek state to enact the overwhelming will of the greek people and vote for that legal frame which stems from the principle of Democracy, the principle of Sovereignty and the principle of Caution as they are mentioned in the International Protocol of Bio-safety of Carthage, which would ban the import, the circulation and the cultivation of G.M.Os in our country.

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