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Legitimation Strategies of Agri-Biotechnology Corporations

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LEGITIMATION STRATEGIES

OF AGRI-BIOTECHNOLOGY CORPORATIONS

Ph.D. dissertation

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Abbreviations

- CDA Critical Discourse Analysis
- CSR Corporate Social Responsibility
- CSP Corporate Social performance
- DHA Discourse-Historical-Approach,
- GATT General Agreement on Tariffs and Trade
- GT Grounded Theory
- GEVB Géntechnológia Eljárásokat Véleményező Bizottság
- GM Genetically Modified
- GMO Genetically Modified Organism
- IPR Intellectual Property Rights,
- SRI Socially Responsible Investment
- WTA Willingness to Accept,
- WTO World Trade Organization
- WTP Willingness to Pay

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1. Introduction

Why does a tiny – molecular-level – laboratory result trigger global economic, social and political changes? By transforming cells and molecules and transplanting genes from one organism into another, biotechnology is not a simple innovation that leads to a new product or reengineers a production process. Its spill-over effect rearranges entire industries, creates new activities, may transform our consumption habits, creates new power positions or reinterprets important basic concepts – just to mention a few important implications. It generates fundamental and radical changes. And it follows from all this that it is a highly controversial field.

Every new product, technology or organization has to create its acceptance and legitimacy – it has to find its place in the existing socio-economic and cultural context, whereby it also influences it. What I seek to understand in my Ph.D. research is what actors are involved, and how, in the debate around agricultural biotechnology and in shaping the economic and social legitimacy of the products of this field.

As a lecturer on business ethics and a researcher of responsible decision-making and sustainability issues, I was driven by my commitment to the natural environment and the well-being of those concerned in selecting my theme, formulating the research questions, structuring the research and choosing the research methodology. My curiosity about the subject has been piqued by the question of

• how in a context involving so many different players and stakeholders a complex and contradictory situation and process evolve. How in a case fraught with conflict and controversy are stakeholders' rights and interests represented and how can different rights and expectations be harmonised?

• and by the fact that the stakes are extremely high in respect of the outcome of these processes. For, they are linked to a special innovation and, as a consequence, a product with far-reaching market, environmental-ecological, social and economic implications that are both uncertain and deterministic. As for long-term health and environmental impacts, not even probability statements can be made about them (the so-called feeding and environmental experiments are basically designed on a short-term basis), while growing genetically modified crops outdoors can easily lead to irreversible impacts on the environment. Clearly, that is why there are so many stakeholders engaging in the debate with a wide range of pros and cons. High stakes have made agricultural biotechnology an attractive target for my

research, in which I also focus on its social and economic context and implications, in addition to ecological impacts referred to in the example above. For, there is clearly more to agricultural biotechnology than being a set of technological processes and products; it represents an institution-forming force, and as it continues to gain ground so does an agricultural policy vision emerge with it.

In the light of the foregoing, my research questions are, therefore, as follows:

1. What stakeholder groups' activities shape agricultural biotechnology: Who are the players and active participants of what is known as the organizational field of agricultural biotechnology? What actors take part in the legitimization (or delegitimization) process?

2. In other words, how do the stakeholders shape the economic and social acceptance and legitimacy of agricultural biotechnology? What arsenal of legitimization tools, arguments and ultimately strategy do they use to establish the legitimacy of or, on the contrary, to delegitimize agricultural biotechnology?

In my research I aim at determining the domestic field of agricultural biotechnology. I wish to map the range of actors participating in this legitimization (or de-legitimization) process and what legitimising arguments they use. Overall, I would, therefore, like to understand the dynamics of the institutional and organizational field where the social legitimacy of agricultural biotechnology is constituted and constructed.

By choosing my theme I intended to explore the literature of legitimacy and its place in organizational studies. The subject of legitimacy is, in my opinion, overshadowed by studies of companies' and industries' competitiveness, whereas market behaviours are difficult to make sense of without clarifying the socio-economic and political embeddedness of companies and industries. That is particularly true of emerging industries, new products and technologies, where embeddedness and the establishment of legitimacy is the primary task. Only in the case of an emerging industry is it possible to make fruitful observations of the dynamics, characteristics and in particular the value and power relations of the social legitimization process which is an indispensable foundation of economic benefits and utility with every new product and service (e.g. so that consumers accept it as legitimate and then have a need and demand for it). My theoretical position is that every new product or service – and hence industry – actually carries within itself the logic of an entire system. It also reflects decisions that are related to the social and technological basis and value choices of the wider environment. That, i.e. the system level of what is termed by specialised literature

as socio-technological regime, can also be captured in its products. From that it also follows that the strategies of the companies of a particular industry imply and represent not only the preservation of the market position and competitiveness of relevant products and services, but also maintain and aim to preserve the given sociotechnological regime. In that sense, therefore, corporate strategies have a social legitimization and political (power-related) relevance themselves.

In the current chapter I provide an introduction to the basic concepts and developments of agricultural biotechnology outlining the Hungarian context followed by an account on my empirical research and the presentation of the structure of my thesis.

1.1. Agricultural biotechnology

My research is directed at the field of agricultural biotechnology, and within that, plant biotechnology. Therefore, it does not cover but, inevitably, touches on the pharmaceutical and biomedical aspects of biotechnology as well as its linkages to the chemical, environmental and other industries. In other words, I conduct my research in what is commonly referred to as green biotechnology leaving aside the fields of red (medical, pharmaceutical and diagnostic) and white (industrial and environmental) biotechnology. Genetically modified organisms (GMOs) and among them specifically genetically engineered plants are at the focus of my investigation. The reasons for this delineation include not only the differences between the products of these fields, but also differences in their interpretation, legitimacy, impacts, market role, criticism etc⁻¹

The first genetically modified crops entered the market in the United States in 1995.² Hardly over four years later, in 1999, in over half of the USA's corn, soybean

¹ I interpret and use the terms agricultural biotechnology and agri-biotechnology synonymously. In the thesis, crops containing genetically modified organisms are referred to as genetically modified crops, transgenic crops or GM crops, and foodstuffs containing such ingredients as genetically modified foods or GM foods.

² We can now speak of several generations of genetically modified crops, even though it is mostly firstgeneration products that are marketed. Different generations include varieties developed with specific characteristics, each serving different purposes and hence different target groups. First-generation transgenic crops can be interpreted as crops modified in their input characteristics. For, in their case the modified characteristic has an impact on the method of production. These crops mostly include pesticidetolerant or pest-resistant varieties or may have both properties. In other words, no crop protection needs to be applied on land areas used for crop growing at all or before sowing, but on an as-needed basis, even during the growth of the crop. Some first-generation transgenic crops produce toxins themselves to keep

and cotton producing areas on average transgenic crops were already grown [Kalaitzandonakes and Hayenga, 2000]. Less than ten years after the emergence of the first GM crops, almost exclusively genetically modified cottonseeds were planted in the United States, transgenic varieties of soybean were grown in most parts of soybean producing regions [USDA, 2004], while by today in three quarters of rapeseed producing regions transgenic rapeseed is grown and nearly two thirds of US corn are genetically modified [IRT, 2011]. These penetration rates are strikingly high. In 2011, genetically modified crops were grown on 160m hectares in 29 countries [James, 2012³l. The United States (69m ha), Brazil (30.3m ha) and Argentina (29.7m ha) are considered the biggest producers, so much so that over three quarters of the world's total land area used for growing GM crops are in these three countries. The primary crops are transgenic soybeans, corn and cotton, but e.g. in the United States, in addition to these crops and the previously mentioned rapeseed, alfalfa, sugar beet, papaya, squash, zucchini and tobacco, and in China, which is ranked 6th with its 3.9m ha, genetically modified tomatoes and paprika are also produced. Among European countries, eight publish data about transgenic crop production. In 2011, Spain (as the largest European agri-biotechnological producer growing GM corn on 100 thousand ha), Portugal, the Czech Republic, Slovakia, Poland and Romania produced genetically modified corn (on a few thousand hectares [Darvas and Székács, 2010]), and Sweden and Germany – the latter on two ha in total [James, 2012] – grew genetically modified potatoes.

In addition to these production data it is known that many countries and regions explicitly prohibit the use of genetically modified seeds. In almost all European countries, many areas (regions, counties, settlements and farms seek to exclude GM crop production (see the database of the GMO-free Regions organization [Gmo-free Regions, s.a.]), and similar efforts are observed on other continents as well. For instance, in the United States Mendocino, California declared its region a GMO-free

away pests. While first-generation crops with modified properties are designed to benefit producers, second-generation developments primarily focus on output characteristics that may be important for consumers. The produce is different and more attractive in its outward appearance, durability and nutrient content. Third-generation genetically modified crops are designed not so much for food as pharmaceutical and other industrial use, given that they are used to manufacture plant-made pharmaceuticals (PMP) or other plant-made industrial products (PIMP).

³ These summary – and most frequently quoted – data are published annually by the International Service for the Acquisition of Agri-biotech Applications (ISAAA). That said, their publications (just as the current presentation) induce lots of debates on grounds that they overstate the spread of GM crops. The debate around statistics on the spread of GM crops is one of the "lateral fronts" of the GM legitimacy struggle, but as such it foreshadows the wider debate.

zone in 2004 [Pechlaner, 2012], which was followed by local decisions in many other states (most recently in Washington) [Heyes, 2012]). In Europe, in a referendum held in Switzerland in 2005, a decision was made to put a five-year ban on growing GM crops, which moratorium was extended by the Swiss government until the end of 2013 [Swissinfo, 2012]. Outside the EU, Serbia and Norway prohibit the production of transgenic crop outdoors [Darvas and Székács, 2010], and Russia banned the importation of GM crops from the autumn of 2012 [Adams, 2012].

The European Union's *de facto* moratorium on the output of new GMOs adopted in 1999 ended in 2004,⁴ in the wake of which the EU allowed the importation and production of Monsanto's GM corn hybrids. Austria was the first in Europe to say no to growing GM crops in 1999 and then again in 2004, immediately after the WTO's decision and in line with EU regulations. Apart from Austria, Bulgaria, France, Greece, Poland, Luxembourg, Hungary, the United Kingdom, Germany and Romania used the option of what is known as safeguard clauses (see details below) and put a freeze on GM crops, which six of them have maintained to date⁵ [European Commission, s.a.; Darvas and Székács, 2012].

1.2. Agricultural biotechnology in Hungary

Agricultural biotechnology in respect of crop production in the EU primarily concerns corn producing countries, since it is mainly GM corn hybrids that are authorised in the EU. Hungary belongs among the major corn producers. In 2011, the EU's 27 member states had a 6.7% share of global corn production [USDA, 2012].

⁴ Before 1999, the EU approved 18 GMO products, while an additional 6 to 8 products made of GM crops but not containing genetic material (e.g. soy lecithin) had already been marketed in the EC before 1991. The moratorium in fact referred to 14 approval procedures in progress at the time in part due to pressure from environmentalists, in part due to member states blocking the approval procedures by their absence or by rejection. Although the member states voted for and against it in equal numbers, in 2004 the European Commission decided to lift the trade embargo: It first allowed Syngenta's canned sweet corn seeds and then MON810 GM seeds to be marketed. Meanwhile, in 2003 the United States (followed by Argentina and Canada) announced at the World Trade Organization (WTO) that the moratorium imposed by the EU and certain member states was irreconcilable with obligations stemming from WTO treaties. In the struggle over the principles of precaution and free trade, in the autumn of 2006 the WTO condemned in an over one-thousand-page report the EU's moratorium, which had been lifted in the meantime, along with those countries that treated GMO imports more strictly than more lenient EU legislation that had been adopted since then [Sipos, 2010]. For details of the WTO debate see e.g. Isaac and Kerr [2003] and Zurek [2006].

⁵ Data from production statistics and the lists of countries imposing the moratorium are contradictory in the case of Poland and Romania. Neither they nor the United Kingdom or Bulgaria currently use the safeguard clauses [European Commission, s.a.]. Romania had grown GM corn and soybeans before EU accession, but since those were varieties not approved in the EU, they ended production upon accession [Darvas és Székács, 2010]. Following the adoption of legislation on co-existence, it produces corn now approved in the EU.

Hungary's output in 2011 on 1.2m ha was 8 m tons of corn [KSH, 2012], and USDA forecasted the same quantity for 2012, which made Hungary the 4th largest corn producer in the EU preceded by France (1.7m ha, 15.5m tons), Romania (2.8m ha, 10m tons) and Italy (1m ha, 9.4m tons) in terms of projected production [USDA, 2012].

This moratorium, however, was not the first ban on GM crops in Hungary. The first ban was imposed in 1996: The then agricultural ministry put an end to outdoor experiments with GM corn varieties and destroyed crops; the experiments were conducted with GM varieties developed in the research institutes of the Hungarian Academy of Sciences (HAS) and the ministry, and with transgenic crops of foreign companies as clients at Hungarian research sites [Heszky, 2012]. This activity was neither illegal nor legal: It was conducted in absence of legislation, without any regulatory framework.

It was Act XXVII of 1998 on Biotechnology Activities that made outdoor experiments possible again, with the relevant licenses – as in other GMO-related cases – being issued by the competent authority based on the recommendation of the Genetic Engineering Advisory Committee (abbreviated in Hungarian as GEVB). It was the first piece of gene technology legislation in Central and Eastern Europe and can be considered as a strict law (except for closed-system scientific experiments, it has made all gene technology activities subject to license). Importantly, it should be noted that the committee it prescribed consisted – and continues to consist today - of the representatives of several stakeholder groups. Its 17 members include researchers (6 persons), ministry and authority experts (5 persons) as well as representatives of environmental and consumer protection NGOs (6 persons).

Following Hungary's EU accession in 2004, about 30 experiments were authorised, whereby a few hundred square metres at a maximum could be used as an experimental lot at a given site on condition that the produce would not be marketed but processed for research purposes and then destroyed [Ministry of Rural Development, 2012]. The next regulatory task was to take a range of legal harmonisation steps before and after EU accession. Act LXVII of 2002 and related decrees allowed the importation of GM crops on condition that transparency was ensured, but that did not happen. The law and related decrees modified the conditions and approval process of outdoor experiments – the latter was adjusted to the EU's licensing system while in the case of the former regulations remained stricter than EU legislation [Sükösd et al., 2008]. Later Decree 82/2003 (VII. 17.) of the Minister of Agriculture and Rural Development and

Government Decree 132/2004 (IV. 29.) assumed requirements laid down in EU regulations such as the mandatory labelling of foodstuffs containing higher than 0.9% GM ingredients [Heszky, 2012].

The WTO debate and moratorium ended at the time of Hungary's accession to the EU and, as a consequence, MON 810 corn hybrids (Monsanto's 16 – now 17 – hybrids containing moth-resistant gene combinations) approved by the European Commission were included in the EU's variety register and thus – following domestic economic value assessments and recognition by the State – two hybrids were allowed to be produced in Hungary [Heszky, 2012]. To avoid all that, the then minister of agriculture announced a moratorium in January 2005. In other words, he ordered a ban on producing, using and importing EU-licensed varieties, which ban he would extend in 2009 and also announced in 2010 in respect of Amflora potatoes, a BASF-product also licensed by the EU in the meantime [Ministry of Rural Development, 2012]. The moratorium challenged by the European Food Safety Authority (EFSA), but finally approved by the European Commission was made possible by the following factors:

(i) Directive 2001/18/EC, Article 23 lays down the option of applying safeguard clauses "when a member state has justifiable reasons to consider that a GMO, which has received written consent for placing on the market, constitutes a risk to human health or the environment, it may provisionally restrict or prohibit the use and/or sale of that product on its territory" [European Commission, s.a.].

(ii) Environmental and health impact studies on GM corn varieties approved in the EU were not made in Hungary.

(iii) At the same time Hungary's Treaty of Accession recognises the uniqueness of the fauna and flora of the Carpathian Basin, i.e. the Pannon bio-geographical region, which is hence dissimilar to other EU countries including those where environmental impact studies were conducted. The imposition and maintenance of the moratorium was explained by the need for studies to be conducted in Hungary. It is to be noted that the decision on the moratorium was supported by all political parties.

Further elements should also be mentioned in respect of regulation including, first, Act CVII of 2006 on the co-existence of conventional and GM crops (i.e. the modification of 1998 legislation) and the related Decree 86/2006 (XII. 23.) of the Minister of Agriculture and Rural Development. Regulating co-existence was necessitated by the EU, which however left the working out of details to the member states. Legislation in Hungary was preceded by a two-year debate process, which

significantly mobilised the stakeholders of agricultural biotechnology. Second, the Fundamental Law effective as of 1st January 2012 provides that "Hungary shall further the realisation of the right laid down in paragraph (1) [of the same Article] by an agriculture which is free of genetically modified organisms" i.e. that "Everyone shall have the right to physical and mental health" [the Fundamental Law of Hungary]. Most recently, in 2012, the Gene Technology Act was further tightened by the inclusion of sanctions for violating the ban on production [HVG, 2012].

As shown by regulatory and legal measures, there are significant efforts to maintain Hungary's GMO-free status. At the same time, tendencies in the opposite direction were seen then – in the period of research – and are still seen today. All Gene Giants, i.e. large seed and crop protection companies with an interest in GMOs, have Hungarian subsidiaries and at least some of them engage, visibly or less visibly, in shaping the GM situation and persuading the stakeholders in an effort to create the legitimacy of GM crops. Another important group of the players are researchers dealing with agricultural biotechnology. They are regularly featured in the media and in common parlance on both the pro and con sides. Mention is most often made of transgenic experiments designed to improve the drought-tolerance of crops; crops subject to domestic gene technology research range from apples through potatoes and rapeseed to grapes and, among monocotyledons, from barley and wheat through corn to rice.

1.3. The main characteristics of the empirical research

A qualitative exploratory piece of research is aimed at answering the research questions underpinned by grounded theory and critical discourse analysis as a methodological basis. The theory-building potential of the former methodology and the latter's focus on the researcher's role, value choices and social impact are important to me, since agricultural biotechnology raises not only economic and ecological considerations but also social and power issues.

The three pillars underpinning the process of data collection are therefore the 43 semi-structured interviews with stakeholders; the 4 focus group discussions with consumers; and the 6 media debates involving researchers which serve as objects of analysis.

Even though the research covers a long period of time, it is not intended to outline a historical process or dynamics or to identify stages of that process. It is not the thematic groups of arguments that I want to capture; I only look into them in order to uncover different legitimization strategies. My writing presents those arguments and considerations connected with agri-biotechnology which are revealed empirically, and thus it may happen that not all elements of the lines of reasoning having different orientations used in the global GM-debate are discussed⁶

Dozens of studies have focussed on agricultural biotechnology in Hungary from the aspect of social sciences. In Chapter 5, I give an overview of domestic research together with analyses in Chapters 5-7 related to the fields covered by the current research. Most of them focus on domestic consumers' attitudes, but there have also been economic analyses on the future of agriculture with and without GM crop production or on how the media discuss the subject of agricultural biotechnology. Some analyses have attempted to identify stakeholders and their discourses and arsenals of arguments. The unique feature of the current research lies in its resting on multiple pillars in addition to its organizational-theory-based perspective. Therefore, it is characterised not only by the pluralism of data collection methods and their matching with particular stakeholder groups, but also by its coverage of the widest possible range of stakeholders.

The next part of my Ph.D. thesis, Chapter 2, looks at the interpretations of legitimacy by the relevant schools of thought of organizational theory. In clarifying the concept, I draw on Suchman's [1995] legitimacy typology in an effort to identify the different factors of legitimacy and their aspects discussed by specialised literature and subject to empirical studies. Chapter 3 deals with industries affected by agribiotechnology. I present two basic tendencies that make fundamental contributions to legitimacy – also of agri-biotechnology companies –, namely strategic alliances and integration and concentration processes induced in particular industries. Chapter 4 covers the methodological background, considerations and process of the empirical research. The results of the three pillars of the research – interviews with members of the organizational field, researchers' media debates and consumer focus group discussions – are presented in Chapters 5-7. Chapter 8 focusses on conclusions drawn from legitimacy typology and empirical research findings and on answering the research questions.

⁶ For that reason, e.g. the principles and forms of technology governance and regulation, or the issues of ownership rights over genetic materials and related questions of justice are not covered.

2. Legitimacy in organization studies

The key term of this dissertation is legitimacy. Obviously, it is a concept deprived of values. If anything or anyone is deemed legitimate, it expresses that it has been accepted or the relevance of the matters has been confirmed. On the contrary, if anything or anyone is not deemed legitimate, that reflects a severe verdict. Deprivation of legitimacy is doubting of relevance. Consequently, for organizations it is a crucial issue to become legitimate parts of a particular community, where a particular action or the lawfulness of their operation is not doubted. Consequently, legitimacy is an important concept both in organizational science and in corporate management practice.

Suchman [1995] provides a comprehensive review and architectonic typology of the term "legitimacy" used in organization and management studies. He offers the following definition of legitimacy, covering all organization theoretical schools:

,, Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." (Suchman, 1995:574)⁷

This is the most frequently quoted legitimacy definition in our science. The definition clearly indicates that it is a normative concept (desirable, right, adequate). It is also clear that legitimacy, i.e., culturally embedded value assessment, is construed in a particular social environment. And it cannot be left unnoticed either that the perception of various actors is associated with it, and in that sense others associate legitimacy with something or someone else.

In this first chapter of the thesis, I am reviewing the approaches to, and the empirical research into the term of legitimacy.⁸ In structure, I follow the dual distinction of the literature, which points to the separate traditions of the institutional, the strategic and the discursive approach. In the analysis of legitimacy, the institutional approach focuses on external (i.e., extra-organizational) institutional structures. "They look from outside to inside" (from the external institutional environment into the organization),

⁷ "Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." [Suchman, 1995:574]

⁸ In the review of the concept and typology of legitimacy, I focus on the organizational theory literature, this paper does not discuss any political, scientific or philosophical approaches. For more details on those, see, e.g. Bayer [1997]

and check whether or not the organization complies with the set of rules, norms, values and convictions institutionalised in a particular social environment. On the contrary, strategic approaches turn adopt the inverse perspective and "look from inside to the outside". The main representatives of the organization apply strategic analyses and identify the most important external actors representing survival or prosperity for the organization, and they try to manage the organization based on the interests, values and expectations (or affecting the perceptions) of those actors). Consequently, the strategic approach focuses on the potential agency. In this situation, the organization is not a passively adjusting party, like in the institutional approaches.

In organization theory, I am analysing the relations of population ecology and sociological institutionalism to legitimacy, which are basically attached to survival, embeddedness and isomorphism. At the same time, the term is not only explored along the organization-theoretical background, but it is also analysed from the viewpoint of strategic approaches. Legitimacy appears in the resource-dependency theory as a condition deriving from the external environment, it is perceived by the stakeholder theory as a contract that considers all players who enjoy and tolerate the impacts of the operation; the non-market and integrated strategy approach relates to, and builds its strategy also on the members of the world beyond the market borders – in addition to the market players – and its industrial form beyond the organizational level is the collective strategy. The more recent approach to corporate communication is a discursive understanding of corporate activities directed to legitimation. Such man's summarising work is used as a common framework for the foregoing: furthermore, it is surveyed which elements of the above approaches can be identified and matched through the Suchman typology, and which aspects are ignored by the trend in question. For this purpose, I primarily present Suchman's legitimacy category and ideology.⁹

Following the theoretical survey, I am summing up the empirical research that looked into the legitimacy of single industries and organization fields, with special regard (1) to the operationalization of the term of legitimacy; (2) to the applied research methodology; as well as (3) to the new, emerging companies and industries.

⁹ Both Suchman (1995) and other authors draw the attention to the frequent but mainly no substantive usage of the term of legitimacy, and to the lack of interpretation. The term is often mixed and merged into other schemes like – for the most part - credibility and reputation, as well as corporate image and corporate identity. Legitimacy differs from them as a term, still, some of its elements can be akin. For the differences of the terms listed here, see e.g.: Fombrun and Shanley, 1990; Mahon, 2002; Whetten and Mackey, 2002; Cecil, 2004; Dowling, 2004; Lievens, 2005.

Suchman (1995) distinguishes three large categories of organizational legitimacy: pragmatic, moral and cognitive legitimacy. According to his statement, these are differentiated through the fact that they are based on different behavioural patterns. Pragmatic legitimacy is based on the short-term, self-interested calculations of the stakeholders (p. 578). Three sub-versions are separated within pragmatic legitimacy: exchange legitimacy, influence legitimacy and dispositional legitimacy. Exchange legitimacy is won by the given organization if at least a part of the stakeholders hope for positive expected value and benefit from the given transaction(s). If I am willing to make at least one exchange deal with an organization (e.g. I buy its product), through the given transaction I also declare both the product and the organization manufacturing the product to be legitimate. In the case of influence-based legitimacy, legitimacy does not refer to single transactions but it covers the organization as such. At least some of the stakeholders are interested in the existence of the organization - hoping for net benefit – and for this reason they are willing to legitimate the given organization. For example, this can cover investors interested in the existence of the stock exchange and all those who are willing to spend their free financial assets on the purchase of shares. Dispositional legitimacy is related to an organization if its stakeholders perceive common values, the organization is "honest", "decent", etc. Thus, this legitimacy is for the "personality", image and perhaps identity of the organization.

Moral legitimacy is not based on the self-interested behavioural patterns but on what is called pro-social behavioural forms. Moral legitimacy refers to the favourable normative judgement of the given organization and/or its activities on the side of the stakeholders (Suchman, 1995:579-581). This legitimacy category is diversified by four sub-versions: consequential legitimacy, procedural legitimacy, structural/categorical legitimacy and personal legitimacy. The performance of each organization is very important for the general public to regard it as legitimate. Therefore, organizations producing "good", "desirable", valuable outputs can be granted legitimacy by those who enjoy its outputs.¹⁰ Of course, the question of what is considered as valuable output and what is not depends on the "reality-constructing" interactions of the given social medium and the organization functioning therein. An example of this can be the legitimacy of pharmaceutical firms if they manage to produce and market a new medicine that alleviates a disease that could not be cured earlier. Procedural legitimacy

¹⁰ However, those who suffer eventual harmful, un-intentional side-effects – those who carry negative externalities – will definitely not consider the given organization legitimate.

means that the given organization properly manages certain matters, dilemmas, needs and expectations – i.e. it proceeds in a socially acceptable manner. For example, it manages and settles consumer complaints through properly transparent procedures. As against this, structural or categorical legitimacy does not refer to single procedural routines (like procedural legitimacy), but to the total organizational structure; to the question of whether the given organization meets the expectation in structural terms: it is the "proper organization for the given task" (Suchman, 1995: 581). Thus, the source of legitimacy is the organizational identity itself. Educational organizations often enjoy this source of legitimacy. The fourth sub-version of moral legitimacy is personal legitimacy. This can basically be attached to the personality of charismatic leaders – for example, inventors-entrepreneurs (like Edison), who also create a new industry through a new technical solution, and legitimate it through their charisma. The institutional entrepreneur discussed in the institutional organization theory can serve with such type of legitimacy for an organization, what is more, for an industry.

The third large category of legitimacy is cognitive legitimacy. The cognitionbased legitimacy dynamism (Suchman, 1995:582-583) refers to the fact that the organization or the industry is a necessary, not questioned, predictable part of the given cultural reality, which can clearly be interpreted by everybody. The two sub-versions of cognitive legitimacy are based on comprehensibility and taken-for-grantedness. The former means that the culturally imprinted explanations and verification statements that legitimate the existence and the manner of operation of the organization are available to the audience at large. Although the sustainability of the current huge-volume use of fossil fuels has partly been questioned in modern societies due to the global climate change, the plastic products that have become a part of our everyday life (and their manufacturers) do not need any separate verification or legitimacy (for the time being). In the case of taken-for-grantedness, the organization as such is not even questioned; it is rested on a social construction of reality that renders it "natural" and "indispensable" in the every-day life of the audience at large. For example, this refers to mobile telephones as a product and to the telecommunication industry offering them – despite the fact that its impact on the human health (brain) is still a debated issue.

Cognitive legitimacy can be influenced or manipulated the least – let's say – by corporate managers or institutional entrepreneurs as against the sources of pragmatic and moral legitimacy. At the same time, this is the most refined, most durable and most invasive form of legitimacy. The industries that can enjoy this are basically "natural",

almost "unquestionable" parts of the given cultural and socio-political medium. Those who still question their legitimacy dispute – in a certain sense – the socio-political medium itself, and they are inevitably qualified as "radicals" (criticizers of the system), as they are simultaneously touching upon established power structures.

Suchman (1995) adds two further dimensions to the above typologisation of legitimacy. On the one hand, legitimacy may refer to various actions of the given organization (the unity/subject matter of legitimacy is each an action), but it can also be attributed to the organization as such (referring to the essence of the organization). On the other hand, the temporality of legitimacy can be emphasised; i.e. episodic or transitional, as well as continuous or long-term forms can be separated.¹¹ Based on the above, Suchman [1995] arranges the typology of legitimacy as shown in the Table 1.

	Actions	Essences			
Enicodio	Evelopee	Disposition:			
Episodic	Exchange	Interest	Pragmatic		
Continual	Influence	Character	legitimacy		
Episodic	Consequential	Personal	Moral		
Continual	Procedural	Structural	legitimacy		
Episodia	Comprehensibility:			Comprehensibility:	
Episouic	Predictability	Plausibility	Cognitive		
Continual	Taken-for g	legitimacy			
Continual	Inevitability	Permanence			

Table 1	The t	typol	ogy	of l	legitimacy
			- 01		

Source: Suchman (1995:584)

Below I am discussing in details the term of legitimacy in various organization-theories, and survey everywhere – through institutional theories (school of institutionalist organizational sociology, population ecology and discursive approach – which categories of the Suchman-type legitimacy typology can be grabbed.

¹¹ At this point we must note that the management of the timeliness of legitimacy by Suchman is rather simplifying. Timeliness is not a dichotomy concept (episodic or continual); we could also refer to cyclicity (e.g., by tying the different demands of legitimacy to certain recurring phases.

2.1. Understanding legitimacy

In the literature of organization and management studies, the term of legitimacy is primarily attached to the sociological institutionalist organization theoretical school. It also appears in the organization scientific studies of population ecology, attached to the problem area of liability of newness and the density dependence model. From among the strategy-oriented surveys, it is the resource-dependency theory hallmarked by the name of Pfeffer and Salancik that relies on the term of legitimacy, but it also plays an important part – even if not always in an explicit form – in the stakeholder theory as well as in the narrower literature of collective strategy and non-market strategy. Below, I am going to cover these topics, starting out from the strategic literature through the institutionalist school to the population ecological approach. Finally, I am going to revert to Suchman's (1995) summarising typology, revaluating and further developing it in the light of my detailed analysis.

2.1.1. Legitimacy in the strategic literature

The general feature of strategic literature is that it deals with the problem of legitimacy from a managerialist perspective. Thus, his analysis is centred on how the manager can influence the environment of the organization in order to win social support. Therefore, in the strategic approaches, the managers have a strategic choice, they possess selection alternatives generated by themselves, and they have a certain degree of freedom in interpreting – what is more – shaping the expectations of the environment.¹²

2.1.1.1. The resource-dependency theory

In their resource-dependency theory, Jeffrey Pfeffer and his co-authors (Dowling and Pfeffer, 1975; Pfeffer and Salancik, 1977; Pfeffer, 1981) define legitimacy – based on the thoughts of the American sociologist, Talcott Parsons – as "congruence between the social values associated with or implied by [organizational] activities and the norms

¹² It is worth mentioning that in a new, summarising piece of work in strategic literature Mintzberg, Ahlstrand and Lampel (1998) classify all of the strategic approaches to be presented in this paragraph of the chapter – from the power source dependence theory through stakeholder analysis to collective strategy – into the trend called by them as "power school" (pp. 233-261). Their book does not cover the concept of non-market strategy.

of acceptable behaviour in the larger social system" (Dowling and Pfeffer, 1975:122).¹³ Any organization, thus also a business enterprise, is legitimate only if it specifies the objectives, and attaches tools to such objectives – which (i.e. both the objectives and the tools) harmonise with the values, norms and expectations of the given social medium. These authors point out that in many cases it is much easier for top managers to change the symbolic meaning of the image of the organization in order to obtain (or even keep or re-gain) legitimacy than to transform the objectives, the outputs or basic processes of the organization in the expected manner (Pfeffer, 1981). All this, however, may easily lead to conflicts according to the theory. Namely because actors representing the external environment are much more interested in the actual results (outputs and processes) as against the managers for whom it is simpler to manipulate the contents of symbolic meanings. For this reason, Suchman (1995) believes that the strategicinstrumentalist approach of resource-dependency theory gives legitimacy an ,,up-to-thepoint, calculative and often oppositional" interpretation (p. 576). As can be seen, in this theory, legitimacy is one of the important types of power sources offered by the external environment, and it is necessary to acquire and to preserve it in order to achieve the objectives of the organization. In this framework of thinking, legitimacy is given meaning - on the one hand - in the world of "material power-dependence relations" (Suchman, 1995: 578). Suchman (1995) classifies this into the pragmatic legitimacy category based on self-interested calculations, and, within this, calls it exchange legitimacy. On the other hand, however, the social actors interested in actual results and procedures can enforce several types of legitimacy from the organization in question. Thus the organizational efficiency, the appropriate performance, which Suchman (1995) calls consequence-based legitimacy; or even the application of certain procedures and techniques, which Suchman (1995) defines as procedural legitimacy. These two types of legitimacy are not based on the self-interested, calculative ground of pragmatic legitimacy but on the socially centred, normative statement, i.e. value judgement which claims that the given organization "is doing what is right" and what is expected in the given social medium – this is what Suchman (1995) categorises as moral legitimacy. Therefore, in the case of consequence-based legitimacy, the actions of the organization

¹³ Originally: "...congruence between the social values associated with or implied by [organizational] activities and the norms of acceptable behavior in the larger social system" (Downing and Pfeffer, 1975:122).

produce the "right", "desirable" results; while acquiring procedural legitimacy succeeds or fails subject to following the "right" processes.

As can be seen, the strategy-oriented resource-dependency theory is able to explain the appearance of the pragmatic and moral forms of legitimacy. Organizations, including companies, have an interest – moreover, they are forced with a view to their survival and prosperity – to acquire legitimacy, as a power source, from their external environment and to handle it strategically. More precisely, all this means within the framework of the theory that the organizations try – in return - to pass on tangible financial benefits to the external source that provides legitimacy. They also try to prove the social sense of their existence, necessity and utility by proving that they emphasise the "good" consequences of their acts as well as the correctness of their organizational processes and procedures, together with their norm-following and valuable character. Those organizations, including business enterprises, that are unable to do all this and do not manage the acquisition of legitimacy as a strategic power source will definitely disappear over time.

2.1.1.2. Stakeholder theory

The stakeholder theory offers an analytic toolbox for strategic management (see Freeman, 1984). The point is that the survival and/or successful operation of any company presumes that the management of the given company carefully considers before each strategic decision which stakeholder interests and values are influenced by the various decision alternatives, and in what manner. This means that - within this framework of thinking - the basis of the wide-scale legitimacy of each strategic decision is that managers consider the expectations of those concerned by the decision in question, and this is also reflected by the process of strategic management, channelling the stakeholders' "voice" in some form into the decision-making process. The necessity of legitimacy is also revealed by the perhaps earliest and repeatedly quoted definition of the stakeholder concept: "those groups without whose support the organization would cease to exist" (SRI, 1963, quoting Donaldson and Preston, 1995:72).¹⁴ In their summarising piece of writing considered as essential in the narrow literature, Donaldson and Preston say the following:

"Stakeholders are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity. Stakeholders

¹⁴ "...those groups without whose support the organization would cease to exist" (SRI, 1963).

are identified by *their* interest in the corporation, whether the corporation has any corresponding functional interest in *them*. The interests of all stakeholders are of *intrinsic value*." (emphasis in original, Donaldson and Preston, 1995:67)¹⁵

This quote also supports that although the stakeholder theory clearly represents a managerialist approach, and thus it takes an instrumentalist form, it is also characterised by normative elements (cf. the stakeholder interest is to be handled as an inherent value). Moreover, Donaldson and Preston argue in their article that the core of the stakeholder theory is normative, because its justification basically relies on this (inherent value ascription as a clear-cut moral message), and thus its instrumental and descriptive character is also based on this (see Donaldson and Preston, 1995:73-82).

Therefore, the stakeholder theory clearly goes to show that each and every strategic decision of the organization must be the subject matter of stakeholder-oriented consideration – for the sake of legitimacy. At the same time, the need for legitimacy can – in a manner congruent with the theory – be extended from various actions (decisions) of the organization to the whole of the organization itself, in fact, by proposing the transformation of corporate governance on a stakeholder basis. In this sense, legitimacy refers to the identity of the organization, and not only to single organizational processes, procedures or actions. Based on the stakeholder theory, the evaluation of corporate social performance (CSP) has also become another important research direction – its practical equivalent cannot only be perceived primarily in the environmental, social and more and more in the sustainability reporting published annually by large companies but also in the movement of socially responsible investments (SRI). Apart from the increased shareholder activism, the latter also implies the appearance and quick growth of what is called SRI funds and indices (e.g. Dow Jones Sustainability Index, FTS4Good etc.).

Thus, the moral interpretation of legitimacy is dominant in the stakeholder theory. The *CSP* and the *SRI* clearly show the importance of consequence-based legitimacy to corporate managers. On the other hand, the stakeholder-oriented concepts of corporate management emphasise procedural legitimacy for the sake of the survival and success of the organization. At the same time, various forms of pragmatic legitimacy also emerge. On the one hand, the literature of the stakeholder theory and –

¹⁵ "Stakeholders are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity. Stakeholders are identified by *their* interest in the corporation, whether the corporation has any corresponding functional interest in *them*. The interest of all stakeholders are of *intrinsic value*." (emphasis in original, Donaldson és Preston, 1995:67)

in relation to this – the corporate social responsibility (CSR) personifies the organizations – in a much-criticised manner – regarding them as an autonomous, morally responsible being. (cf. argument "the company can have a conscience" by Goodpaster and Matthews, 1993). This is a part of disposition legitimacy in the Suchman-type (1995) categorisation. And, perhaps surprisingly, exchange-based legitimacy also appears in the justification of the stakeholder theory, as is also supported by the following quote: "… *all* persons or groups with legitimate interests participating in an enterprise do so to obtain benefits …" (emphasis in original, Donaldson and Preston, 1995:68).¹⁶ If each and every part of the organization in question is imbibed by the normativity of the stakeholder-theory, we can also talk about the structural/categorical legitimacy of the organization. Suchman (1995) claims that in this case the legitimacy of the organization as a system (i.e. not only single organizational actions or procedures) is approved; the identity of the organization is given favourable moral confirmation.

The stakeholder theory has even appeared in politics, where former US president Bill Clinton and British prime minister Tony Blair also mentioned stakeholder capitalism. The social theory formations of these ideas and declarations are attempts made towards the normative foundation of the stakeholder theory, out of which the social contract theory-based argument is one of the most frequently mentioned arguments (Donaldson and Dunfee, 1995). All this is important from the viewpoint of legitimacy because it highlights the need for legitimacy on the level of the politicaleconomic system. Specifically, the legitimacy problems of a new organization or a newly emerging industry may even intertwine with the legitimacy questions of the political and economic system – exerting a favourable or unfavourable impact on the subject matter of the survey (i.e. the organization or industry). The birth and introduction of various new technologies can even evoke opposition by a specific group or groups of the given society. And here we should not necessarily think only of a technology that gives rise to "sophisticated" associations, for example, the nuclear industry, whose birth has always been shadowed - from the viewpoint of its social legitimacy - by the destruction imposed by nuclear bombs onto Hiroshima and Nagasaki. Among other things, the birth of the automobile was not uniform social success at the beginning either, because the appearance of the "rushing" (of course,

¹⁶ "...all persons or groups with legitimate interests participating in an enterprise do so to obtain benefits..." (Donaldson és Preston, 1995:68).

slow if measured by today's technological standards) individual motorists raised public indignation and even led to civilian movements especially in contemporary towns (see Rao, 2004). New technologies exert an impact on the social-economic-political system, and in certain cases they can launch or strengthen major changes by influencing the power relations of the social actors. Therefore, companies and enterprises intending to distribute new technologies and related products also need legitimacy on the level of the prevailing social and economic set-up, and in the meantime they can also contribute (positively or negatively) to the legitimacy of the given system. This type of legitimacy can be called as political-economic legitimacy.

2.1.1.3. Non-market and collective strategies

Another two, less known and quoted slices of the strategic literature are also relevant from the viewpoint of legitimacy. One of the strategic approaches – attached to the name of Baron (1995a and 1995b) in management literature – divides the organization's external environment into two parts: market and non-market environment. Accordingly, one can talk about market and non-market strategy, as well as their synergy, what is called integrated strategy. The market strategy is focused on gaining competitive advantage, and the well-known competitive strategy approaches can be applied in this regard [see Porter, 1993 and Wernerfelt, 1984; Chikán, 2002; Czakó, 2007]. The nonmarket strategy is focused on interactions carried on with state bodies, local communities, civil organizations and the media (i.e. non-market stakeholders). To put it in another manner, the non-market environment is made up by the elements of social, political and legal set-up that structure the company's interactions outside the market. According to Baron's definition (1995a), "a nonmarket strategy is a concerted pattern of actions taken in the nonmarket environment to create value by improving its overall performance" (emphasis in original, Baron, 1995a:47).¹⁷ In this framework of thinking, the purpose of the non-market strategy is to form and influence the non-market environment with a view to market value creation (increasing the shareholder value). For this reason, it tries to influence the non-market environment (by applying the nonmarket competences of the organization) to create a market opportunity (e.g. by creating the legal facility of a newly emerging industry); or to provide protection against the rivals (e.g. by lobbying for a regulation that affects the foreign competitors adversely). The non-market strategy may try to avert or moderate threats coming from suppliers or

¹⁷ "A nonmarket strategy is a concerted pattern of actions taken in the nonmarket environment to create value by improving its *overall* performance..." (emphasis in original, Baron, 1995a: 47).

buyers possessing a strong bargaining power (e.g. consumer boycotts). Moreover, in many cases, the non-market strategy is not conducted by single companies but by a whole industry in order to be able to influence the non-market environment according to its interests (see more details below, when the collective strategy is discussed).

The use of the non-market strategy is preferred by the researchers of corporate environmental management when analysing and drawing up the typology for corporate environmental strategies. With the help of this, Schot (1992) pointed out in his research into chemical multinational companies that the applied environmental strategies and toolboxes primarily try to restore the authenticity and the legitimacy of the industry that has been lost due to numerous chemical accidents and disasters. The huge companies of the chemical industry were forced to experience the loss of the taken-for-grantedness that they had established as a science-based industry providing the society with useful products. The public did not doubt the existence, the necessity and the use of chemical products until huge accidents took place (Sandoz - Seveso, Exxon Valdez, Union Carbide – Bophal). This type of legitimacy is called by Suchman (1995) as taken-forgranted legitimacy. This means that the chemical industry and its products became widespread in the modern market society, the consumers evidently bought and used the multitude of products offered by the industry; and other industries built their production processes onto chemical industrial inputs. In Suchman's (1995) legitimacy typology, this taken-for-grantedness is not classified into the pragmatic and the moral, but into the cognitive legitimacy category. The accidents shook this form of legitimacy, which is the most difficult to acquire and that can be "managed" the least by corporate managers.

According to Maxwell and his co-authors (1997), the non-market strategy is focused on stakeholder-related connections, and tries to meet their expectations outside the market performance. Analysing the environmental strategies of multinational companies like Volvo, Polaroid and Procter & Gamble, it is pointed out that those elements of the environmental strategies prove to be successful – from a corporate viewpoint – that are based on the existing organizational competences. If, however, the results achieved through them are not in conformity with the environmental expectations of the environmental performance. The authors establish that the surveyed companies were not able to increase their legitimacy because the influential part of the stakeholders evaluated their actions as only symbolical, what is more, manipulative.

Reinhardt (1997) examined the opportunities to apply the environment strategy as a differentiating competitive strategy by processing numerous case studies. Analysing the strategy of the Patagonia clothes company he pointed out that the firm's success and the authenticity of its environmental efforts were primarily ensured by the fact that the corporate management re-positioned the firm as a whole, together with its activities and processes. This integrated strategy "paid well" through winning and enhancing the pragmatic (e.g. dispositional), the moral (e.g. structural/categorical), as well as the cognitive legitimacy. The Patagonia firm was "rewarded" by its stakeholders with the type named by Suchman (1995) as legitimacy based on comprehensibility. This type of cognitive legitimacy refers to the fact that the environment of the organization is able to give plausible interpretation to the actions of the organization and to the sense of its existence, and, at the same time, the stakeholders will be able to forecast its further actions and to provide them with sense with great security.

With regard to the uses of non-market strategy, Baron (1995a) mentioned, among other things, the example of US agrar-biotechnological firm, the Calgene, Inc. (pp. 50-51). In order to bring to the market its new development (genetically manipulated tomato), this small-size agrar-biotech firm was forced to launch a nonmarket action in order to establish appropriate legal regulations and to modify the existing ones. These non-market actions covered the introduction of cooperation with other, competitive firms in the emerging biotechnological industry (initiating the establishment of an industry association); the voluntary transfer of R+D information – protected as a business secret - to the regulatory authorities; participation in national and international professional forums; as well as paying special attention to media contacts. This example also highlights that the non-market strategy may be especially important in the case of an emerging industry, where there are no "ready-made rules" yet (1993:221), but they will significantly influence the competition itself and the chances of various organizations for survival. In the emerging industries, there is uncertainty about the technology, thus - Baron's example (1995a) also goes to show that procedural legitimacy comes into the foreground instead of consequence-based legitimacy (cooperation with the authorities, proving the bona fide character of the organization in question). Baron points out also himself that the non-market strategy is in many cases implemented at the level of an industry rather than at the level of an organization. This, however, already stretches over to the topic of collective strategy.

According to the thoughts of Astley (1984), what he regards as "pioneering ethos", "ego-centred organization" and "combat-field analogy" was dominant in the literature of the strategy for a long time. Based on this, the literature of the strategy concentrated on a lonely organizational fight against the exogenous environmental barriers, and concentrated on the strikes against the competitors. Due to this, the importance of cooperation and inter-organizational collaboration was squeezed into the background. In this context, collective strategy means ,, the joint formulation of policy and implementation of action by the members of interorganizational collectivities" (Astley, 1984:527).¹⁸ Therefore, the term of collective strategy – which was originally introduced by Astley and Fombrun (1983)¹⁹ - refers to the common strategic manoeuvring of the group of companies recruited from identical and different industries with a view to the favourable solution of a common issue. The participating organizations mobilise various power sources voluntarily and together, and harmonise their actions in order to achieve their common objective. They do all this because they are similarly involved in a certain matter, and together they are able to act more effectively in order to promote their interests. In this case, effectiveness refers to the fact that there is a bigger chance to moderate, or perhaps terminate uncertainties caused by the external, complex environment through inter-organizational actions (Astley and Fombrun, 1983). Through the collective strategy, the cooperating organizations make their environment more predictable and more stable, at least temporarily (Bresser and Harl, 1986). Therefore, it is the purpose of collective strategy to render the involved industry/industries better accepted in their external environment; or to influence the expectations, norms and values of the external environment in a manner that they conform with the current features of the organizations pursuing the collective strategy; or it tries to promote the change in the cooperating organizations themselves (but most cases generally cover an approach to both). Winning, keeping or regaining legitimacy is closely related to the purposes of collective strategies. An example of this is given by the global programme launched in the chemical industry under the title "Responsible Care".

¹⁸ "...the joint formulation of policy and implementation of action by the members of interorganizational collectivities." (Astley, 1984:527)

¹⁹ They compare the collective strategy to the adaptation of biological communities, and define it as follows: "the collective strategy is the systematic answer of the group of organizations that cooperate in order to adapt themselves to the deviations that are typical of their inter-organizational environment." Originally: "...a collective strategy is a systemic response by a set of organizations that collaborate in order to absorb the variation presented by the interorganizational environment" (Astley és Fombrun, 1983:580).

This is all the more a good example because - when the programme was started in the mid-1980s - the economic performance of the chemical industry (mainly that of the USA) was outstanding, and the companies produced an unprecedented amount of profits and exports, their R&D expenditures and the wages paid to their employees also reached a peak in the industry's history (Prakash, 2000:83-91). Thus, the launch of the programme - which was initiated by the Canadian chemical industrial federation and was quickly taken over by its US partner (Chemical Manufacturers Association, CMA, established in 1872) - was not justified by only profits to be realised in narrow, short-term, image-related advantages (reputation, goodwill). This period coincided with the quickly disappearing social legitimacy of the chemical industry (see page 15). These accidents confirmed the public viewpoint (radically changing the discourse and the social mood attached to the industry) that the chemical industry is not able, and is not trying to make efforts to carry out its activities without damaging the natural environment and the human health. If, however, the industry fails to meet these expectations in terms of value and norm, this will upset the social balance of advantages and drawbacks that verifies its existence. This, in turn, requires a clear-cut and strict intervention and regulations by the community, i.e. obviously by the state. As a result, similar uncertainties emerging in the external environment evidently endanger the investors' long-term confidence through their risk perception. Another threat of the extended and stricter regulation is that resources will also have to be taken away from R+D which is to set the foundation of long-term international competitiveness - in order to conform with the regulation.

For this reason, Community Awareness and Emergency Response (CAER) became one of the basic pillars of Responsible Care. According to the recommendations of this scheme, the industry has to make major efforts to inform, prepare and involve the public in order to guarantee public accountability. This was one out of the total of six codes of $conduct^{20}$ that were worked out by the American chemical industrial federation and proposed to its members and partners for acceptance. All these efforts were meant to ensure that the chemical industry should recover social confidence, and it should once again step back into its creditworthy and reliable, i.e. legitimate role that actually promotes public good. However, the industry failed to successfully restore its taken-for-granted cognitive legitimacy, partly because the Responsible Care programme was not able to become creditworthy in all respects because - and this is its biggest deficiency - it did not lay down any professional sanction against the chemical industrial member companies that failed to start its introduction. For this reason, the majority of the social opinion-leaders regarded these efforts as mere window-dressing.

Although the industry has not been able to re-gain the former recognition, numerous chemical industrial companies that made major efforts towards institutionalising the code of conduct were successful in restoring their shaken

²⁰ The other five prongs of the code of conduct covered the following areas: pollution prevention, process safety, distribution, employee health & safety and product stewardship. (Prakash, 2000:124-125)

legitimacy in the local communities affected by their operations. They were relatively successful in regaining moral (consequence-based and procedural) legitimacy. However, the unauthentic attitude of the whole of the industry also overshadows – from time to time – the social legitimacy of these leading companies, and continues to leave their cognitive legitimacy blemished.

2.1.2. Institutional approaches

Contrary to strategic approaches, institutional approaches look at the issue of legitimacy by searching for the reflection of a particular social environment in the organisation, rather than focusing on the managers' action options. In a particular social environment, the myths manifested and conveyed by institutions must also permeate the organisations for the latter to seem legitimate. True, this projects an "over-socialised" image of the organisation, which is a classical feature of structuralist social theories. That image needs to be eased by the institutional approaches in order to open the theories also to actions. The analyses adopting institutional organisational sociology as their framework discussed below seemed more suitable for such purposes than the organisation theory of the population ecology. The concept of the "institutional entrepreneur" shifts the institutional approaches from the purely structure-based analysis towards the opening of possibilities for action and choices.

2.1.2.1. Sociological institutionalist school

The classical article of the institutionalist organization theoretical approach (Meyer and Rowan, 1977) claims that the formal organizations, just like the companies themselves, are established in an environment populated and intertwined by numerous institutions. Upon their foundation, the organizations internalise those institutionalised norms and practices ("myths") that are required for their environment (the actors making up the environment) to regard their establishment and existence as necessary, valuable and sensible; i.e. legitimate. In the sociological institutional organization theory, the creation of legitimacy is primarily connected to the term of isomorphism. In another classical study of the school, DiMaggio and Powell (1983) state that once organizations dealing with similar activities are established – i.e. a new industry is formed – there is a heavy pressure on the organizations to become similar to each other. This process - beyond the homogenisation caused by the competition – was given the name institutional isomorphism, and their three fundamental mechanisms were

presented. On the one hand, coercive isomorphism, whereby the most evident example is state regulation, the power of law. On the other hand: mimetic isomorphism, whereby the newcomers try to imitate the already successful organizations in order to survive (a sample for survival). On the third hand, they separate normative isomorphism, which can derive, for example, from specific expectations of various professions or from the norms of the cultural environment. In this framework of thinking it is evident that the new organization or the upcoming industry must fulfil the legal prescriptions as well as certain social expectations and moral norms in order to gain legitimacy. Apart from this, the legitimacy of the organization and the emerging industry is also increased if similar operational forms and unified operating standards are established; i.e. the organizations imitate each other in certain respects (e.g. technological processes, quality standards, etc.). Therefore, according to the institutionalist school, numerous routines, procedures or programmes can be detected even in the operation of the organizations of the business sphere that are not related primarily to the material and efficiency-increasing aspects of the market competition but to the most important institutions in the environment of the organization or industry that provide legitimacy to the company and its industry. As can be seen, the institutionalist organization theoretical approach relocates the gravity centre of examination from the competitive environment to the institutionalization of the wider social environment, what is more, it also regards the competition, the competition market itself as a specific institutionalized factor. In this manner, all companies and industries are socially embedded, and their performance and existence cannot be understood by concentrating exclusively on their competition environment as even the performance itself is construed and becomes legitimate in the reflection of the institutions and the institutionalised norms of the external environment.

The interpretation of legitimacy at the institutionalist school is also based on Parsons' thoughts, as could be seen in the resource-dependency theory. This means that the organization in question is legitimate if its purposes are harmonised with the values of the wider social medium. In this regard, legitimacy is related to the social evaluation of the organization's objectives. At the same time, in addition to Parsons' approach, another main source for the legitimacy theory of the institutionalist school is the phenomenological-constructivist social theory approach hallmarked with the name of the Berger and Luckman (Berger and Luckman, 1998, see primarily pp. 131-179). In this framework of thinking, legitimacy is given a cognitive overtone, and it refers to the fact that stakeholders are able to interpret the given institutional order as well as the

existence and the manner of operation of the organization, and regard it as plausible.²¹ This cognitive interpretation of legitimacy emphasises comprehensibility, predictability and taken-for-grantedness (Scott, 1991). An activity, organization or industry gains social and institutional legitimacy when its existence and manner of operation is taken for granted; its knowledge is widespread in the given social medium; it can be related to expectations that are clear to everybody. This cognitive-cultural meaning of legitimacy is summed up by Meyer and Scott (1983) in their definition: "… organizational legitimacy refers to the degree of cultural support for an organization – the extent to which the array of established cultural accounts provide explanations for its existence" (p. 201, quoted by Scott, 1991: 170).²²

An important difference between the legitimacy term of the resourcedependency theory and that of the institutionalist school is that the former emphasises the strategic selection of the organizational leaders, i.e. the opportunity to influence legitimacy; while the structuralist organization theory approach of the latter calculates with a passive organization in the sense that it emphasises the dominant role of the external environment, whose expectations as well as institutionalized logics and norms of action are tried to be followed and imitated by each organization when institutionalising their own organization. It is not by accident that while the resourcedependency theory conceptualises the forms of legitimacy that can also be influenced by the leaders, i.e. primarily the pragmatic and secondarily the moral legitimacy, the institutional organization theoretical school is mainly able to display – in its framework of thinking - the cognitive legitimacy that cannot be manipulated, or can be manipulated only to a little extent. At any rate, the institutionalist school moved away from this classically structuralist social theory approach over time, and tried to extend its theoretical framework in a manner that it is able to explain the changes (e.g. the birth of new markets, products or technologies), the opportunity to strategic selections, the differentiation and the heterogeneity of the external environment (see DiMaggio and Powell, 1991). This new trend of institutionalism uses the term of institutional activist, which bears similar features to the term of entrepreneur by Schumpeter (see Rao,

²¹ "Legitimacy as a process, i.e. legitimation can be regarded as the "secondary" objectivation of the *sense*. Legitimacy *creates new senses*, whereby the task is to *sensibly integrate meanings* that are related to institutions not similar to each other. The function of legitimacy is to make already institutionalised "primary" objectivations objectively *accessible* and subjectively *visible*." (Berger és Luckmann, 1998: 131-132, emphasis by me – MR)

²² "...organizational legitimacy refers to the degree of cultural support for an organization – the extent to which the array of established cultural accounts provide explanations for its existence" (Meyer és Scott, 1983: 201).

2004).²³ The institutional entrepreneur takes the role of a change agent, initiating and supporting new organizations, new technologies, new products or new procedures. He strives for creating their legitimacy. His main task is to establish the legitimacy of the new, the emerging one (Rao, 2004:362). He has to seek and creatively combine for the new, the emerging one the cultural explanations that are accessible, interpretable and accepted in the given social medium in a manner that the value and the sense of the new and the emerging one is created.²⁴ On the one hand, the institutional entrepreneur establishing something new has to create a convincing "story" for the "new" that is culturally adjusted to the given institutional environment (in order to gain moral legitimacy). On the other hand, these stories are important symbols (Lounsbury and Glynn, 2001) that mediate and continuously construe the specialty, as well as the specific features and identity of the new venture (or emerging industry). The success of the institutional entrepreneur is measured by the fact that the given social medium does not doubt the value and the utility of the new (product), the emerging (industry), and finally it already regards it indispensable for everyday community/social existence. The cognitive legitimacy of taken-for-grantedness and comprehensibility is created.

For the most part, the institutional entrepreneur has a rhetorical task. Narratives and stories as well as claim-making that will convince the stakeholders and verifies the legitimacy of the new product or the emerging industry, or even its unavoidability (Rao, 2004:361-363). The image and the identity of the new must be created in the public opinion – the institutional entrepreneur must be able to link the new (unknown) to the already known categories and comprehensible cultural schemes in order to gain cognitive legitimacy (Lounsbury and Glynn, 2001). The institutional entrepreneur is, in fact, the "ideologist" of the new product or emerging industry in question. This is well reflected in the applied narratives, which can emphasise general comprehensibility, necessity, exclusively the favourable features and opportunities. In many cases, this is balancing along the border of, and it even tilts over into manipulation. For example, the institutional entrepreneur is boasting only with favourable research results, and is trying to deprive the representatives of counter-arguments of their legitimacy (de-legitimate).

²³ For this reason, in the following I am going to use the better-sounding term of institutional entrepreneur instead of the verbatim term of institutional actor. Lounsbury and Glynn (2001) introduced the term of "cultural entrepreneurship" for the same phenomenon. This may, however, lead to misunderstanding in Hungarian, therefore, I prefer the term of institutional entrepreneur.

²⁴ In fact, this is what supplements the description related to Schumpeter's term of entrepreneur with the interpretation task of the creative combination of the given cultural samples and explanations. This is also the task of the entrepreneur, i.e. creating the actual institutionalisation (see specifically Lounsbury and Glynn, 2001).

Or he tries to organise situations (demonstration events) in which the subject matter of legitimacy will surely be the winner as a result of the circumstances. The analysis by Rao (2004) into the development of the automobile is a tell-tale example of this. According to the story, the enthusiastic followers of this new technology of mobility – arranged into automobile clubs – organised spectacular reliability contests in order to demonstrate the excellence of the automobile. The races organised only from 1895 until 1912 created the social legitimacy for the automobile as a reliable technique for transport – the new product and the related technologies were accepted, recognised and supported by the socio-political environment. They succeeded in building a narrative around the automobile that established an audience and found the way to the everyday public opinion. A common, symbolic environment was developed around the automobile that gave sense to the automobile and its use – and it became "comprehensible" and "sensible" for the public (society).

Taking the role of the institutional entrepreneur is generally not the task of one single person; the institutional entrepreneur is – in most cases – the network of actors. This may be a role for corporate executives, who also establish the interest representation organization of the new industry for the sake of more effective collective actions. Or the representatives of a given profession, or a group of scientists who build the legitimacy of the new product or even the emerging industry through their professional organization (or networks). However, it is not excluded either that the legitimacy activity of the institutional entrepreneur is assumed by a group of consumers who are enthusiastic about the new product. The institutional entrepreneur – whoever it is composed of – will break the structural stiffness of the institutionalist organization theory, and renders the opportunity of strategic choice and action conceptualisable in this theoretical framework. In this manner, it is the institutional organization theory from among the above-mentioned frameworks that they render to be more suitable for managing the diversity of sources for legitimacy – ranging from pragmatic, through moral, up to cognitive legitimacy.

2.1.2.2. Population ecology

The researchers who belong to the population ecological organization theoretical school focus on the question of how the social, economic and political factors (the main variables of the external environment) influence the foundation and failure, the number

and density and the changes in composition over time of the organizational populations and communities (Baum, 1996; Kieser, 1995).²⁵ One of the first theoretical theses related to the population ecology was given the name "liability of newness". Accordingly, the failure rate of new organizations is big; bigger than that of organizations having been in operation for a longer time. According to the argument behind the thesis, the higher failure rate of new organizations is due to the fact that they do not yet learn their new role in the given social medium; their influencing ability or their social recognition is missing, or it is poor; they do not hold stable stakeholder relations that would guarantee the continuous acquisition of power sources and that would render their environment more predictable. Their legitimacy is simply not created yet, as they have not had the chance to prove their reliability and accountability. At the same time, the new empirical research has challenged the general validity of this longbelieved thesis. A great number of research works that applied the organizational size as a control variable could establish that the thesis was not justified - much more was, however, the "liability of smallness". Namely, if the new organization or organizational population succeeds in becoming legitimate relatively quickly and in accessing vital power sources by creating good contacts with the main stakeholders, the oracle of "liability of newness" will truly lose its validity (Baum, 1996:79-83).

The density dependence model is also a basic model of population ecology. According to the argument of the model concerning legitimacy, the initial growth of the organizational population density contributes to the favourable change in the legitimacy of the new population (Hannan and Freeman, 1988, quoted by Kieser, 1995). Namely because the density growth improves the power-source-gaining ability of the members of the population as the population becomes better known and thus more accepted in its institutional environment.

However, as the number - and thus the density - of organizational population continues to grow, the competition among the members will increase - and so will the failure of the organizations (Baum, 1996:85). This argument highlights - on the one hand - the similarities between the population ecology and the institutional organization theory (which are evidently due to the structuralist character of both). On the other hand, it highlights the absence - in the above model - of the specification of concrete

²⁵ Organizational population covers the group of organizations dealing with similar activities and showing a similar power-source-utilising pattern; on the other hand, organizational communities are the functionally integrated systems of organizational populations interacting with each other (Baum, 1996).
factors enhancing legitimacy and competition. By now the new empirical research activities of the population ecology are characterised by the search for synergy with the institutionalist school (see, among others, Baum and Oliver, 1992; Rao, 2004). The nearing of the two trends can also be perceived in the interpretation of legitimacy. The population ecological studies differentiate the cognitive and the socio-political sources of legitimacy (Aldrich and Fiol, 1994; Baum, 1996). In congruence with the institutional school, the former is understood as the taken-for-grantedness of various organizational forms, while the latter is construed in a manner that the organizational form in question - which is typical of the given population - gets embedded into the relations and normative context of the given social medium free from conflicts (in a conform manner). As a result of these theoretical considerations, the relational density variable also gets into the specification of the density dependence model (Baum, 1996). Thus, legitimacy is intended to be measured through the embeddedness of the organizational population - forming the subject matter of the survey - into the institutional environment. This means that the interdependence between the organizational population and its institutional environment is operationalised. The reason is that according to the presumption: the thicker is the connection net attaching the population in question to the given social medium (e.g. local residents) and to the governmental bodies (the more embedded is the surveyed population into its institutional environment), the bigger is the socio-political legitimacy of the population, thus the higher is its chance of survival. The population ecological trend is also applying more and more the variables based on the considerations of the institutional school for measuring cognitive legitimacy. This is why, for example, efforts are taken to operationalise it through the social awareness of the given organizational population in the media.

From the viewpoint of our topic - the legitimacy processes of the emerging industry - especially interesting is the study by Aldrich and Fiol (1994), which defined this question by claiming that it is indisputably risky to start a new venture (i.e. to create a new industry) but is it also regarded as "craziness" because the institutional entrepreneur must render an environment - definitely hostile to a certain extent - to be "receptive". Capital must be gained from sceptic sources; the labour force must be trained for the new job; and, in fact, a new market must be created as well and its new rules must be created in cooperation with the state. And all this should be done in a manner that the social legitimacy of the enterprise is uncertain, questionable, or it has

not been established yet. How, and along what strategies can the institutional entrepreneur re-create or cause to be re-created the negotiated order prevailing in the institutional environment? The following table summarises the answer given by Aldrich and Fiol (1994):

	The type of legitimacy			
The level of analysis	Cognitive	Socio-political		
Organizational	Developing knowledge basis through symbolic language and behavioural patterns	Creating confidence through consistent organizational events		
Industrial	Developing knowledge basis by setting up consensus over a "dominant design"	Creating the perception of reliability through mobilisation towards collective actions		
Inter-industrial	Developing knowledge basis by supporting ,,third party" type actors	Working out the reputation of the industry by negotiating with the other industries and searching for consensus		
Institutional	Developing knowledge basis with connections attached to the educational curricula	Creating legitimacy through collective marketing and lobby activities		

Table 2 Institutional entrepreneur strategies for supporting an emerging industry

Source: Aldrich and Fiol (1994:649)

Aldrich and Fiol (1994) regard confidence as one of the most essential binding elements – the organization-level factor of socio-political legitimacy – that all new ventures or emerging industries need from the main stakeholders of their institutional environment. If the most influential stakeholders – having power sources – do not even possess the minimum degree of confidence towards the industry; if the institutional entrepreneur is unable to feed on at least a little slice of confidence capital of the stakeholders, in that case the initiative is most likely to be doomed to failure. A contribution may be paid to this confidence capital by the convincing and consistent story (e.g. a positive technological vision) about the new industry. In many cases, it is worth concealing the "radicalism" (radical novelty, lack of knowledge) of the emerging new; stories attached to the already known win much more confidence (Aldrich and Fiol, 1994:652). As a basic tool for acquiring cognitive legitimacy at an organizational level, the institutional entrepreneur uses symbols and a language and follows behavioural patterns that evoke favourable reactions in the eyes of the main stakeholder

group in the institutional medium concerned. They suggest the feeling of ",we say the same", ",we talk the same way", ",we behave in the same manner", thus the stakeholders understand the message; ultimately the feeling of ",we" (community) is evoked in them – and with this, confidence is created.

There is usually much uncertainty about the technology of the emerging industry (Porter, 1993:222). This area does not have the crystallised knowledge base that is characterised by the existence of a "dominant design" (Anderson and Tushman, 1990) in matured industries. Therefore the emerging industry cannot enjoy and utilise the exploitation based learning (March, 1991) and the quick expansion of canonised knowledge in the institutional medium, and thus the - typically incremental technological innovations that are founded by the common cognitive framework of various participants (managers, engineers, related industries, regulatory authorities, consumers etc.). All this - i.e. the lack of common knowledge and problem interpretation embodied in "dominant design" – makes the emerging industry look more unreliable in its institutional environment compared to the matured industries. The creation of reliability may be enhanced if more and more organizations - that are similar to each other – start populating the emerging industry – isomorphism creates reliability, thus its legitimating impact can be enforced (Deephouse, 1996). At the same time, homogenisation makes it easier to initiate collective actions and to work out collective strategies (Aldrich and Fiol, 1994:654). On the other hand, taking common steps will stabilise the external environment, will reduce uncertainty, and also renders the emerging industry more predictable.

Aldrich and Fiol (1994) claim that third parties carry great significance in the legitimation processes of the level among industries. For example, industry associations, who can improve the cognitive legitimacy of the emerging industry through numerous activities (e.g. professional papers, professional exhibitions and other events, etc.). Aldrich and Fiol (1994:658-659) claim: if the emerging industry is also successful in moderating the hostile or contrary interests of other, former industries (zero-sum conflicts), moving them towards discussions and cooperation by finding economic and other connections (turning them into a positive sum game), its socio-political legitimacy can also be increased through its gradually evolving favourable reputation.

Aldrich and Fiol (1994) hold the view that the collective strategies of the emerging industry play the vital role on the institutional level of legitimacy acquisition. By this time, the new industry already creates a denser organizational population. It can

most effectively propagate the explicit and implicit forms of knowledge embodied in its activities if it is also able to find its place in the institutional system of education. The way to acquiring taken-for-granted legitimacy is getting connected to the school system, which is the authoritative and respected institution of knowledge creation and transfer in modern societies. This guarantees both knowledge replenishment and reproduction for the industry, and also turns the industry itself into an institution by "transforming it into a profession". The power status of the industry must be strengthened in order to acquire socio-political legitimacy at an institutional level. For the sake of this, the emerging industry can try to co-opt the influential stakeholders; tries to initiate various forms of strategic alliances; makes efforts to de-legitimate its rivals and criticisers; and aims at maintaining good relations with the state bodies and authorities.

Therefore, on the basis of the summary by Aldrich and Fiol (1994):

"Gaining the trust of stakeholders within and around the firm provides a basis from which to build a knowledge base via cooperative exchange rules with other similar organizations. Such interactions, in turn, make it easier for member firms to organize their collective interests and to build a broad reputation of their industry as an enduring part of reality. An established reputation facilitates the co-optation of institutional actors, ultimately leading to legitimacy." (Aldrich and Fiol, 1994:663)²⁶

2.1.3. Discursive approach

Communication is an important tool in the hands of the organisations for establishing legitimacy. It is the function of the leaders of the organisation in the first place to build up the legitimacy of the organisation through effective communication. That is, there are discursive ways to acquire and preserve legitimacy or, in other words, organisational legitimacy is constructed (or deconstructed) in a discursive manner. The discursive approaches positing and analysing the discursive constitution of social reality [Golant and Sillince, 2007], and the discursive social structure of legitimacy [Vaara and Tienari, 2008] have acquired a significant role in organisational theory in general.

The units of analysis of the discursive approaches are usually micro-level texts (e.g. media texts, corporate communication materials), analysed by the researchers to

²⁶ Originally: "Gaining the trust of stakeholders within and around the firm provides a basis from which to build a knowledge base via cooperative exchange rules with other similar organizations. Such interactions, in turn, make it easier for member firms to organize collectively and to build a broad reputation of their industry as an enduring reality. An established reputation facilitates the co-optation of institutional actors, ultimately leading to legitimacy." (Aldrich and Fiol, 1994: 663)

explore the discursive legitimation strategies applied by the actors. The analyses highlight how the organisations and their leaders strive to instrumentalize their communication – in line with the strategic approaches to legitimation showed previously – so that it should serve their legitimation goals. The organisations use a multitude of communication channels and devices to influence the perceptions of their stakeholders in favour of their own organisational legitimacy; to convince them of the usefulness of their organisation (pragmatic legitimacy) and its "goodness", "righteousness" (moral legitimacy). As a matter of fact, they fight with the critiques challenging their legitimacy for control over the definition of the meaning of the actions and/or conditions challenged by the latter. In such interactions, legitimacy is construed in discursive ways [Beelitz and Merkl-Davies, 2011] and, at the same time, it also becomes a power issue: the party gaining control over the definition of meaning will be the one with access to the desired state of legitimacy.

As put by Vaara and Tienari [2008], the actors actually position themselves in the discursive space, in favour of some discourses and in opposition to others. The emerging special inter-discursive dynamic shows – in the opinion of the authors – their choices between the comprehensive discourses (ideologies) present in the given social medium. With that the actors reproduce or rearrange also the power relations of the broader social medium in their discursive "battles" concerning legitimacy (see also Granlund [2002], and Beelitz and Merkl-Davies [2011]). Therefore, critical discourse analyses set the requirement for the researchers/analysts to link the discursive legitimation strategies of micro-texts to the macro-level power relations. As critical social scientists, they think that what is explored in the text analyses can be interpreted in relation to the conditions prevailing in the broader social context. Micro-level (local) meaning making cannot be separated from the macro-level domination/power structures.

Some authors (see Palazzo and Scherer [2006]) consider legitimacy a politicized concept (also in the case of market organisations), linking the discursive approach clearly to moral legitimacy. Palazzo and Scherer [2006] associate the strategic approaches with pragmatic, and the institutional ones with cognitive legitimacy, stressing that it is the discursive approach that can really do justice to the moral dimension of legitimation. Therefore, according to their proposal, organisational legitimacy should be investigated in the context of the discursive approaches and primarily the theory of communicative rationality of German social scientist Jürgen

Habermas. In that context, organisational legitimacy can be acquired and preserved through processes of deliberative debate carried out with the stakeholders in compliance with certain moral criteria (e.g. no domination, equal parties).

2.2. Legitimacy Management

Suchman (1995) attempts the synthesis of the strategic and structuralist (institutional and population ecological) approaches through the profound clarification and categorisation of the term "organizational legitimacy". In order to reconcile the structuralist concepts with the strategic approaches, Suchman (1995) points out that it is the different behavioural forms and their dynamics – serving as a basis of the legitimacy typology – that render it possible for corporate leaders to strategically manage the problem of legitimacy. The strategic steps by managers may result in a major difference even in the legitimation of organizations operating within the same industry. The influencing or "management" of legitimacy is mainly based on, and incorporated in the communication between the organization and the stakeholders (p. 586) – in this context, of course, the communication covers the non-verbal meaning carrier opportunities as well as various dialogues and discourses. Thus a wide range of tools is available to the leaders in order to decide whether intervention is required in various situations (legitimacy management), and if yes, which tool is expedient to use.

The analyses in the relatively recent items of the technical literature of organisational science at the time of finalising this thesis tend to connect legitimacy with narratives, rhetorics and discourses more intensively also at the theoretical level (see among others Goland and Sillince [2007], Vaara and Tienari [2008], Roundy [2010], Beelitz and Merkl-Davies [2011], Castelló and Lozano [2011]). At the theoretical level, the discursive (discourse-based) approaches to legitimacy want to go beyond the so-called agency–structure dichotomy (the under- or over-socialised approaches), and assume the structuring of social reality through discourses (Goland and Sillince [2007]). Vaara and Tienari [2008] define and analyse emprirically the legitimacy strategies as the mobilisation of specific discursive resources. In fact, actors position themselves in the discursive space, by taking up position for or against other discourses. According to the authors, the resulting special inter-discursive dynamism shows choices among the comprehensive discourses (ideologies) which exist in a particular environment. Thus the actors also reproduce or rearrange the power relations of a wider social environment in the discursive battles around legitimacy (see also

Granlund [2002] and Beelitz and Merkl-Davies [2011]). Vaara and Tineari [2008] distinguish between four general semantic and functional strategies: legitimacy based (i) on some authority, (ii) on usefulness, (iii) on some set of values or (iv) on some narrative. Those authors think (similarly to Beelitz and Merkl-Davies [2011]) that with a discourse-based approach, the macro perspective of the institutional analysis can be fruitfully supplemented with micro-level analyses.

Suchman (1995) connects the strategic opportunities before influencing legitimacy to three general tasks: the situations of winning legitimacy, preserving legitimacy and regaining legitimacy. From the viewpoint of emerging industries evidently the first strategic situation – winning legitimacy – is relevant. In the case of emerging industries, generally the manner of operation itself, the basic processes are technically problematic and they are less institutionalised (they are uncertain in technical respects, and have not become routine yet). In this situation, each and every organization must take considerable efforts – apart from working out its own organizational manner of operation and turning it into a routine – in order to establish the industry itself (p. 586). Thus, for example, the industry itself must be created together with its legitimacy. Thus, the legitimacy strategies must also appear – next to the organizational strategies – with a large emphasis at a collective level. The institutional entrepreneurs must mobilise their stories and narratives also in order to establish a supporting stakeholder alliance for the benefit of the emerging industry; as well as to win the support of the influential stakeholders.

Suchman (1995) ranks the strategies on the acquisition of legitimacy into three categories: (1) conformity; (2) selecting and (3) manipulating. At the same time, this categorisation seems to be rather narrow. The literature on impression management can be called to help the extension. This – basically social-psychologically born – approach has been applied by several organizational analyses to describe the opportunities to influence legitimacy (Elsbach and Sutton, 1992; Elsbach, 1994; Arndt and Bigelow, 2000).²⁷ Elsbach (1994) says that it is all the more advantageous to build the literature of impression management into the issue of organizational legitimacy because it well supplements the structuralist line of the institutionalist sociological theory (which gives the organizations a passive role). It is the missing strategic dimension that the literature

²⁷ The basic literature of impression management is Erving Goffman's influential sociological-sociopsychological work (Goffman, 1999). See mainly chapter VI. "The art of impression management" pp. 167-189.

of impression management inserts into the survey of legitimacy. The impression management approach concentrates on the role of those "spokespeople" (cf. institutional entrepreneurs) who act in the name and on behalf of the organization (or industry) in order to gain legitimacy, or to protect the organization (industry) from the attack questioning its legitimacy. The technique of impression management can be explored by analysing the verbal manifestations of the spokespeople. These explanations are aimed at defending the legitimacy of the organization, to come up with excuses, to acknowledge certain errors and to verify the actions of the organization. Arndt and Bigelow (2000) argue that the defensive techniques of impression management protecting legitimacy (excuses, verifications, concealing, aversion or refuting) can also be applied in a preventive manner in order to set up the legitimacy of the organization (industry) in question. However, the picture revealing the chances to strategically influence legitimacy can be further enriched if we also consider the typology worked out by Oliver (1991), which categorises - in general terms - the strategic answers that can be given to the processes ongoing in the institutional environment. The next table covers the typology that I have compiled in the wake of Oliver (1991), Suchman (1995) and on the basis of the organization studies of impression management (mixing - and at some places – modifying the categories of the above authors):

Before discussing in details the above strategic options for acquiring legitimacy, it is worth pointing out Ashforth and Gibbs' (1990) statement which claims that organizations have two general tools for winning legitimacy – they call them "substantive" and "symbolic management" (p. 178). The point of the difference is that in the case of substantive management the organization goes through real changes in order to win legitimacy, for example, the organizational structure is transformed, the organizational goals and/or organizational processes are changed. As against this, symbolic management tries to pretend as if the organization fulfilled the expectations of the institutional environment. In the latter case, they try to shape the meaning of the actual actions and events in a manner that it is conform with the given institutional medium²⁸. Obviously, the below explained strategic and/or tactical steps can be both substantive or symbolic. Therefore, let us see the strategic chances of the emerging industry for winning legitimacy!

²⁸ Long and Driscoll [2008] give a thorough empirical analysis of the corrporate codes of ethics in that respect. According to their critical message, the organisational facades are turned nice by the codes of ethics as symbolic tools of legitimacy, although the underlying content (substantive component) remains unethical, or at least lags behind the deep (or elevated) moral ground of the code .

Strategy	Tactics	Example			
Conformity	Imitation	Imitating the dominant patterns of the institutional environment			
	Conformity	Following and keeping to the rules and norms of the institutional environment			
Compromise	Balancing	Seeking balance between the different expectations of diverse stakeholders			
	Reconciliation	Adapting to various institutional elements, while avoiding others			
	Verification	Assuming responsibility for the event, but not for the negative consequences			
	Bargaining	Negotiation with the stakeholders			
Avoidance	Concealing	Hiding behavioural forms that are against the norm			
	Aversion	Refusing participation in a negative event, seeking excuses			
	Switching off	Loosening ties with the institutional environment			
	Abandoning	Changing objectives, activities and the field of operation			
	Selecting	Selecting the segment of the institutional environment			
Confrontation	Refusal	Ignoring the dominant norms and values			
	Emphasising	Emphasising favourable consequences, while the negative is shows as necessary and unavoidable			
	Attribution	Attributing favourable consequences as its "own"			
	Questioning	Questioning the dominant rules and expectations			
	Attack	Acting against the institutional pressure			
Manipulation	Co-opting	Turning influential stakeholders and institutional actors into allies			
	Influencing	Forming expectations, values and evaluation criteria			
	Control	Powerful action against, and exercising pressure on stakeholders			

Table 3 Strategic opportunities to acquire legitimacy

Source: Oliver (1991:152-159) and Suchman (1995: 587-593).

The strategy of conformity is that the emerging industry tries to get adjusted to the stakeholders' expectations and to the cultural patterns of the institutional environment. In this case, the strategic steps of corporate managers and/or the industry's representatives are meant to ensure that the emerging industry should get embedded in the existing institutional environment without any problems. The tactical steps of imitation and conformity dominate in the strategic toolbox. The managers want to make sure that the emerging industry is populated with the organizational forms widespread and considered legitimate in the institutional environment, as well as want to imitate the existing organizational, management and perhaps technological processes that are considered to be legitimate. They make all efforts to meet the expectations of the most influential stakeholders, to give them direct benefit and to be in harmony with their declared norms and values. They try to attach the emerging industry's objectives and organizational mission statements to purposes and values that enjoy wide-range social acceptance, and harmonise with the norms dominant in the institutional environment. Thus, they mediate symbolic messages that are comprehensible to the stakeholders and are regarded as valuable by them.

The strategy of conformity is most successful if the institutional environment mediates relatively homogeneous and clear-cut expectations and norms to the emerging industry. However, this is not the case for the most part. The emerging industry makes use of the compromise-searching strategy if the institutional environment is characterised by heterogeneous, vague and contradictory expectations, norms, rules and values. In that case, it is not easy to adapt to the different interests and values of various stakeholder groups, it is necessary to strategically balance them for the sake of legitimacy of the emerging industry. In many cases, this requires discussions and bargaining processes. Some institutional expectations are often not fulfilled, and this is when it is required to take reconciliatory actions that point out conformity with the other institutional expectations. Conformity and the ensuing legitimacy can never be perfect in a heterogeneous institutional environment characterised with competing values and interests, and generally the conformity with the institutional environment is only partial.

The strategy of avoidance gains special importance in acquiring legitimacy if the emerging industry does not wish to, or cannot meet an influential element, rule, value or expectation of the institutional environment. Either single or basic activities of the organizations of the emerging industry can be illegitimate on the basis of the given aspect of the institutional environment. This is when the tactic of concealing can be successful, through which the emerging industry takes efforts to deny illegitimacy, e.g. by trying to withhold all the information that would question the legitimacy of its activity; or it presents plans to terminate or to keep up the questionable activity in order to hide the failure of their implementation. Therefore, in such cases, the emerging industry and its organizations may opt for the approved tools of "windowdressing", sending numerous symbolic, ritual messages about their conformity in order to conceal

the real events. In many cases, the legitimacy-seeking tactics tries to eliminate or decouple the incriminated activity – qualified as illegitimate or the related actors from the organization or industry. For example, the responsibility is transferred from the "welloperating" organization to the "bad employees who make mistakes"; or the responsibility is transferred from the industry populated with conform organizations to specific "bad and vicious organizations" as exceptions. The purpose of the aversion tactic is mainly to avoid and minimise public control and to preserve the autonomy of the organization or the industry. The aversion tactics can be assisted if the organization or industry is able to change its power-source-dependent situation in a manner that it reduces the influence of those stakeholders who question legitimacy. Within the strategy of avoidance, a given organization or industry may apply the tactics of abandoning if it cannot avoid adaptation to the institutional expectation in question. This is when it is forced to give up the illegitimate activity or procedure, it must be terminated in the given institutional environment, and it must be relocated into another medium that accepts the behavioural form in question. At the same time, the tactics of selection may also be available on a preventive basis, through which the organization strategically selects the one from among the heterogeneous, fragmented and contradictory institutional segments where its activist is qualified as legitimate. This tactical step of avoidance basically relies on the logic (and even on the tool) of market research: to select the favourable environmental segment.

The strategy of confrontation significantly differs from the foregoing in that it is a legitimacy strategy that is focused on attacking the elements and actors that question legitimacy. To put it in another way, it is a de-legitimacy strategy which is focused on acquiring or defending the legitimacy of the emerging industry by depriving its enemies and criticisers of their legitimacy. The operability of the strategy of confrontation requires, on the one hand, that the stakeholders and the institutional environment of the emerging industry mediate contradictory and conflicting interests, values and expectations. On the other hand, the emerging industry and the institutional entrepreneurs need to have appropriate power in order turn against each other the conflicting actors of the institutional environment according to the interests of the industry. In this manner it can become possible to refuse the expectations of certain stakeholders by making reference to other contrary interests and values. The tactics of questioning can also be applied; it tries to take away the legitimacy of the values or interests of the actors attacking the emerging industry. In fact, the tactics of attack evidently implies an initiative step against the interests and values whose existence and legitimacy would endanger the emerging industry.

Besides the previous strategies, the industries and institutional entrepreneurs representing innovations that radically differ from the established practices and from the norms incorporated in such practices may need to take much more active steps in order to acquire legitimacy. All these strive for transformations of the institutional environment that re-form and manipulate the dominant cultural patterns for the sake of the interests and the values of the emerging industry; or strengthen certain cultural schemes to the debit of others. On such an occasion, the representatives of the emerging industry must basically have a new interpretation and explanation of social reality accepted. All this is an ideological task that was already mentioned with regard to the institutional entrepreneurs. The tactics of the legitimacy strategy of manipulation covers co-opting, lobbying and other influencing techniques, as well as the acquisition of a power position that enables the exercising of a certain level of control over the stakeholders. Each tactic is aimed at integrating the emerging industry into a power position or alliance through which it is able to influence its institutional environment in a manner that it serves its own legitimacy.

Of course, the strategic and tactical steps of legitimacy are not exclusive, i.e. the new organizations or emerging industries do not have to consistently follow only one of them. These strategies and tactics are much more supplementations to each other, and their application depends on the specific situations. What is more, single organizations or industries may even apply different legitimacy strategies and/or tactics either simultaneously, but in different contexts, and towards different stakeholders. Evidently, the general situation is like this also because legitimacy is almost always problematic as each organization or industry is forced to face different social norms, expectations and values. The institutional environment is very rarely homogeneous and consistent – it is more often heterogeneous, fragmented, contradictory and vague. This also goes to show that the organization or industry that is too confident about its already acquired legitimacy and does not pay attention to its maintenance and verification may suddenly get into its own legitimacy crisis.

Ashforth and Gibbs (1990) draw the attention to the double-edged nature of the legitimacy acquisition strategies. Namely because the more legitimate an organization or industry is regarded by the stakeholders, the less it needs the intensive application of legitimacy strategies and tactics. If, however, this is not the case, it is usually not

enough for the organization or the industry to look legitimate, but it also has to promote it. This can easily lead to the vicious circle that the more legitimacy is needed, the more suspicious the legitimacy-related attempts can become in the eyes of the stakeholders. This means that if an organization or industry goes to the extreme when proclaiming its conformity and social utility, it may easily undermine and shake the much-desired legitimacy itself. It is not difficult to fall into the "self-promoter's paradox" if the corporate managers or industrial representatives forget that the stakeholders are not at all passive actors of the legitimacy strategies – warns the author couple (Ashforth and Gibbs, 1990:191). Sonpar et al. [2010] describe such a case, based on which they also discuss the paradox nature of legitimacy. They stress that as the need for legitimacy varies in time, the timely dynamism of legitimacy is indispensable for the managers of an organisation. The need for legitimacy may occur with sudden outbreaks, when it requires recurrent renegotiation(s) with the stakeholders.

2.3. The typology of legitimacy – theoretical summary

Having gone through approaches of organizational studies (structuralist, strategic, discursive) s, the categorisation of the term of legitimacy Suchman (1995) seems to be very profound, but not at all full. When verifying the stakeholder theory at a macro level, it was mentioned with regard to the social contract theory that single emerging industries can – in a given case - "re-organise" the social contract, in a sense that it changes the power-economy relations and cultural patterns that are prevailing in society. Numerous new technologies and emerging industries had, and still have this potential. This evidently covers bio-technology in general, and agri-biotechnology in special terms, besides the information and telecommunication technologies. The latter does not stay ineffective at all for the political economy of agriculture: the distributional and power relations change between the actors, the supply chain is transformed, what is more, global power-economy consequences can also be seen well (see the global character of the supply chain and the North-South problem).

The studies using discourse-based theoretical fraemeworks also indicate that the micro-level dynamism of legitimacy (between an organisation and its stakeholders) is not free of, in fact, it is based on, the discourses of a wider social environment (discursive resource). And everything forms a power game: the discourses of legitimacy are intertwined with macro-level power relations and, vice versa, the discourses of legitimacy try to strengthen or weaken macro-level power structures.

Legitimacy, therefore, is a political concept. For this reason, the Suchman typology must definitely be extended with the political-economic (or socio-political) dimension of legitimacy. This cannot be reduced either to the dimension of pragmatic, moral or cognitive legitimacy. It has an individual importance and explanatory power. Table 4 is formulated in order to highlight the relationship of the now four elements of legitimacy typology and the approaches of organizational studies.

Organizational study	Characteristic type of legitimacy		
Strategic			
Resource-dependency theory	pragmatic		
Stakeholder theory	moral		
Non-market and collective strategieis	pragmatic		
Institutional			
Sociological institutional	pragmatic, moral, cognitive		
Population ecology	pragmatic, socio-political		
Discursíve	pragmatic, moral, cognitive socio-political		

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At the same time – as can evidently be seen in the later chapter covering strategic alliances – the phenomenon and the possibility of legitimacy spillover carries special significance for emerging industries and new organizations (Kostova–Zaheer, 1999). All this goes to show that a strategic alliance with a mature industry or organization can help to realise not only narrow and direct economic advantages for the emerging industry (or new organization) but the existing legitimacy of the mature industry (organization) is also "projected" to its allied partner. In this case we are witnessing a kind of "legitimacy externality" (or spillover effect). Baum, Calabrese and Silverman (2000) call this phenomenon "associative legitimacy", referring to the fact that the recognition and the acceptance (i.e. legitimacy) of the mature party in the strategic alliance stabilises the situation of the starting enterprise. Appearing in such a strategic alliance, the starting venture, the emerging industry can successfully build its social legitimacy, by making use of the embeddedness and acceptance of the already legitimate partners. Legitimacy spillover (or associative legitimacy) can be attached to

all main categories of the Suchman typology. The fact that the starting venture is accepted by an already matured, legitimate industrial party within the framework of a strategic alliance mediates the message that – on the one hand - the starting venture promises financial opportunities (*it is worth* doing business with it). Thus, the starting venture can win pragmatic legitimacy, which is indicated by the "character" dimension of the Suchman typology. At the same time, the starting venture appears as a reliable partner in such a strategic alliance because it fulfils the expectations (*it is conform* with the prevailing norms). In this manner it can win moral legitimacy – which is also indicated by the "structural/categorical" dimension of the typology. A strategic alliance continues to mean that the "spokespeople" (institutional entrepreneurs) of the starting venture (emerging industry) are able to come up with arguments for the legitimacy of the new activity according to plausible, i.e. known, cultural explanations. With this, efforts are made to build cognitive legitimacy. If the partner of a starting venture in a strategic alliance is the representative of an industry that incorporates a prevailing technological regime, the political-economic legitimacy gets also "projected" on it: the new seems to get integrated in the established system.

2.4. Empirical research on legitimacy

In this chapter I am summarising those empirical research activities that make an attempt to measure the term of legitimacy. We present the various types and dimensions of legitimacy that have so far been operationalized by empirical research. I am also trying to clarify the theoretical and methodological background to empirical research. Finally, I am going to evaluate how successful the attempts have been towards empirically interpreting and measuring legitimacy.

2.4.1. Testing legitimacy in the strategic approach

A specific and well circumscribable field of surveying organizational legitimacy is the legitimacy-related role and the power of voluntarily disclosed environmental and social information in corporate annual reports. The past one and a half decades witnessed numerous research activities that – based on the approach named by them as legitimacy theory – seek relations between the legitimacy challenge to the company and the above form of voluntary information provision. The researchers of this area attach their legitimacy theory to the involved theory and to the social contract theory (see among others Khor, 2003; Campbell, Craven and Shrives, 2002; Tilling, 2002), as well as to the strategic trends of organizational legitimacy approaches, while some pieces of writing take a turn into the political-economic direction (see among others Cunningham, 2004; Power, 2003; Buhr, 1998). The basis of the legitimacy theory is defined by Guthrie and Parker (1989) as a social contract guaranteeing the existence of the company in the long run in which the company offers activities that are desirable from a social viewpoint in exchange for accepting its objectives and for other rewards.

The basic quote of these works is Dowling and Pfeffer's (1975) approach to legitimacy (see page 9). They go on along the feature of the definition which says that ,, if there is an actual or potential deviation between the two value systems [embodied by the social and the organizational activities], it implies danger from the viewpoint of organizational legitimacy" (Dowling and Pfeffer, 1975:122). This real and potential deviation is described by Sethi as a legitimacy gap, and - through its deepening - the management risks the organizational legitimacy and survival (Sethi, 1979:65).

All pieces of writing in this research circle itemise the voluntary environmental and social information of corporate annual reports as well as the voluntary environmental and social reports as a strategic tool in managing the corporate legitimacy. The starting point of the research works is the emergence of the legitimacy gap, i.e. each case relates to efforts on restoring or re-gaining, newly creating and strengthening legitimacy. In the course of these research activities, a gap may emerge as a result of a specific corporate or industrial event (e.g. accident-related environment pollution) (Patten, 1992); it may be due to the eternal change in the external institutional environment (see among others Tsang, 2001); the increasing interest, awareness of, and pressure by certain stakeholders (see among others Wilmshurst–Frost, 2000);²⁹ pressure by environmental lobby organizations (Tilt, 1994; Deegan and Gordon 1996), etc. These writings pay attention exclusively to the latter from among the substantive and symbolical forms of legitimacy management (Ashforth and Gibbs, 1990; for details see page 30). They look at a single, narrow slice: certain types of communication response

²⁹ Although – with some authors - this also means the anxieties and the attention of a wider, non-market circle of stakeholders, the majority of the research activities are aimed at satisfying the needs of corporate decision-makers, owners and regulatory authorities in this manner. The analysis of Wilmshurst and Frost (2000) claims that the primary attraction force for the management is the right of shareholders and investors to information, as well as the observation of the legal obligations. Gallhofer and Haslam (1997) say that the voluntary environmental report is mainly a tool for defence against the potential interventions by the regulatory authorities. The weakest stimulants of voluntary reports are: the attention of suppliers and the possible counter-acts of the competitors.

to the challenges of legitimacy. They do not cover the issue of whether the corporate reactions contain substantive elements aimed at changing the organizational objectives, structures and processes. The possible trends of the related legitimacy strategy are summarised by Lindblom as follows (quote: Clarke and Gibson-Sweet, 1999):

- 1. informing the stakeholders about the improvement of the performance, about the "solutions" to the problems earlier perceived by them;
- 2. changing the perception of the stakeholders about the matter causing the challenge to legitimacy;
- 3. distracting the attention from the case;
- 4. changing the external expectations concerning performance.

The information provided voluntarily through annual reports may serve all of the above four objectives. The empirical research works mainly focused on the content analysis of the annual reports through corporate case studies in Anglo-Saxon areas – primarily in Australia, later in the USA and in Great-Britain. In a part of the research, these were supplemented with questionnaire surveys and interviews. Basically the relations between corporate legitimacy as well as the voluntary environmental and social reports were surveyed. These tests of their legitimacy theory led to mixed results: some of the surveys experience a definite relationship between the challenges to legitimacy and the changes in the voluntary reporting habits, i.e. they perceive the appearance of voluntary information or its size bigger than earlier (see e.g. Patten, 1992; Deegan and Rankin, 1996; Buhr, 1998; Wilmshurst and Frost, 2000), while others do not confirm this relationship (see among others Guthrie and Parker, 1989).

A part of these research works pay special attention to the targets of the legitimacy strategy, i.e. which stakeholders can be potential recipients of the information disclosed in this manner and which stakeholders can thus become important actors in restoring legitimacy. The traditional readers, the investors were identified as the relevant publics accessible by the annual reports, addressing other stakeholders – thus local communities, civil organizations –with the reports was regarded as superfluous, what is more expressly harmful due to the differently judged desirable tone, and perhaps displeasing for investors. (Neu, Warsame and Pedwell, 1998; Deegan, Rankin and Tobin, 2002; O'Donovan, 2002; Cunningham, 2004). Apart from this, Milne and Patten (2002) surveyed whether the voluntary release of information used as the tool for strategic re-legitimacy actually exerts a positive impact on the group of stakeholders considered as relevant, as well as on the investors and investment

consultants in their experiment. The hypothetic investment decisions surveyed by them acknowledged the operation of the strategic tool.

This legitimacy theory moves within an extremely narrow field of corporate and industrial legitimacy. Its application is "simplifying" – admits Deegan (2002:282), and describes it as the "relatively undeveloped theory of management behaviour". The exclusive image trend of restoring legitimacy is added by the fact that – although it perceives that legitimacy does not have only one single trustee – it only considers one group of stakeholders. It can be cited as its criticism that it is limited to certain tools of environmental and social information disclosure, but does not reach up to the analysis of sustainability reports. In this context, the social and environmental information disclosed in the annual reports is itemised at a secondary level, and although the term of triple bottom line (Elkington, 1994) appears in some writings, its spirit – at least the coequality of the three pillars – is not showing at all. Guthrie and Parker (1989) as well as Tinker and Niemark (1987) give a verdict embedded in political economy, claiming that these reports are rhetorical tools that are used for propagating corporate ideology in the social, economic and political arena.

Similarly, a major obstacle to this research trend is that it only adopts a managerialist standpoint. Thus, it ignores - for example – that the stakeholders can be involved in the elaboration of the reports, what is more, they are to be involved. On the other hand, the participatory solutions evolving in this manner can also help the management of legitimacy, moreover, they cannot only contribute to its symbolic but also to its substantive side. It is an important statement of some authors in this research field that all this research is focused on the aspect of legitimating the organizational operation only "as against an approach that reflects the management accountability or acceptance of responsibility namely that information must be provided to all those who have the right to know" about the impacts of the corporate operations (Deegan, 2002:283). Namely because it is an important difference that the disclosure of information is merely motivated by corporate survival, or corporate – management – sense of responsibility. The answers to the legitimacy challenge defined in the annual report "do not cover up" the term of responsibility (Deegan, Rankin and Tobin, 2002), and the question of accountability is not present in these research activities.

2.4.2. Testing legitimacy in the structuralist approach

The majority of the empirical studies are led by the theoretical guidelines of the population ecological and the institutionalist organization theoretical trend. The first study on this line was made by Singh, Tucker and House (1986). The authors made an approach from the classical question of population ecology: what are the processes behind the phenomenon of the liability of newness of new organizations? In order to answer the question, the populations of voluntary social organizations were surveyed between 1970 and 1980 in Toronto (Canada) and its agglomeration. It was presumed in harmony with the theory of the population ecology that the external legitimacy acquired at the initial stage of development of organizational populations improves the chances of organizations to survive. Various indices were applied in order to operationalise external legitimacy. It is an important point in the life of the surveyed population whether they are registered by the state authorities – thus obtaining legitimacy for their formal operation. The authors argue that another measurable feature of the social acceptance of the given organization is the charity registration entry, just as the size of the board of directors was also regarded as such. If it is bigger, the organization was able to co-opt a significant part of the influential stakeholders, increasing the organization's external legitimacy. Their quantitative analysis confirmed that the external legitimacy considerably reduces the risk of the organization's termination; thus the liability of newness is related to the degree of legitimacy of new organizations.

Baum and Oliver (1991) and (1992) researched the importance of legitimacy also within the population ecological framework, but extending it with an institutionalist moral. This time, the members of the surveyed organizational population were child care institutions operating in Toronto and its agglomeration between 1971 and 1987. It is the theoretical starting point of the authors that the organizations which manage to work out close relations with the recognised, legitimate institutions of their institutional environment have a bigger chance of survival than those who are unable to get embedded in their institutional medium. The institutional connection was measured through ties to state bodies and community institutions, specifically via service contracts concluded by the city as well as agreements on the common use of buildings and/or premises signed with community institutions. Their quantitative analysis established that "institutional relations play a very important part in reducing the probability of organizational liability" (Baum and Oliver, 1991:213). The child care takers who had closer ties to their institutional environment definitely produced a better survival result than those who did not have such relations. This survival advantage increased through the rise of population density and thus competition. In the light of this, the population ecological thesis of the liability of newness needs refining because the new organizations that get embedded in their institutional medium at the early stage of their development have a bigger chance to stay alive even compared to the older organizations. The close relations attached to the state and community actors of the institutional medium also moderated the liability of smallness. Baum and Oliver (1991) claim that the pressure of environmental selection is not only put on single organizations but also on institutional relations between organizations.

Among the empirical research activities into legitimacy based on the institutionalist theory, prominent work was done by Ruef and Scott (1998) due to the fact that they strived for operationalising and testing more types of legitimacy than the previous (and other) researchers. They survey four questions in order to explore the dynamics of legitimacy: (1) What institutional elements or aspects are important from the viewpoint of legitimacy? (2) Who are the social actors that "offer" legitimacy? (3) At what level does the problem of legitimacy emerge (population, organization, organizational unit)? (4) Which are the most striking dimensions of legitimacy that are evaluated by the actors? (p. 878)

Based on the first question, Ruef and Scott (1998) differentiate normative, regulative and cognitive legitimacy (as against Suchman's (1995) pragmatic, moral and cognitive legitimacy), following the three basic institutional types of the institutionalist organization theory – normative, regulatory and cognitive institution – (Scott, 1995), to which three other, various controlling mechanisms can be attached: normative, coercive and mimetic (DiMaggio and Powell, 1983). Normative legitimacy refers to the fact that the given organization or industry follows the normative expectations and rules that are relevant and dominant in the institutional medium – for example, aspects that can be attached to various professions. A good example of regulative legitimacy is given by the earlier presented research by Singh, Tucker and House (1986), where the acquisition of legitimacy was attached to official legal registration. Cognitive legitimacy is the most fundamental one out of the three aspects – claim Ruef and Scott (1998) – in the sense

that it determines what type of actors, structures and procedures can be conceived (are sensible) and what meaning contents can be associated to them (interpreted) in the given institutional medium. However, in their own empirical research - which covered hospitals in San Francisco and its agglomeration – they mainly surveyed normative legitimacy. They paid special attention to the issue of how the frequent professional checks and evaluations conducted by various professional organizations influence the surveyed population of the hospitals. In this manner, they closely examined the external source of legitimacy and its impact through the "normative evaluation of the technical and management legitimacy" of hospitals (p. 880). In their analysis they considered technical and management legitimacy to be the most striking dimension because these functions are structurally separated at hospitals - the former is attached to the medicalprofessional staff, and the latter is related to the administrative staff at American hospitals. The author couple believes that the hospitals give a good example of organizations that are operating in a closely institutionalised environment, and for this reason it is vital for their survival whether their structures, staff and programmes are in conformity with the normative elements of the institutional medium. This means that the external, normative legitimacy of hospitals is primarily provided by the professional organizations controlling and evaluating them. Accordingly, they operationalised normative legitimacy with the accreditation guaranteed by the external organizations.

According to the main statements by Ruef and Scott (1998), both technical and management legitimacy play an important part in reducing the organizational liability. It is also an essential result that they show, and the changes taking place in the institutional environment influence which of the two legitimacy types takes a more important role. While the institutional environment of American hospitals was characterised by a high level of federal regulation and intervention, the technical legitimacy played a more important role. When the conditions of "guided competition" were introduced, management legitimacy gained a bigger importance. It is an interesting statement of the authors that a positive relationship was found between technical legitimacy as well as the age and size of the organization, but management legitimacy showed a negative relation to the size of the organization, and – similarly - the management legitimacy was also smaller at niche-specialist hospitals, as against general hospitals (i.e. specialised organizational form as against general form); as well as for-profit hospitals as against non-profit ones. The organizational population (at hospitals)

surveyed by the author couple is far from being typical. At the same time, as was also pointed out by them, the various professional accreditation procedures (e.g. ISO certificates) that have become widespread over the past decades ensure that their judgements can also be extended to other organizational populations.

Deephouse (1996) tests one of the basic propositions of the institutionalist organization theory, defining his basic dilemma already in the title of his work: "Does isomorphism legitimate?" According to this interpretation, the legitimacy of the organization covers approval and support granted by the social actors; i.e. the acceptance of the organization's objectives, structure and procedures. In turn, the objectives, structure and procedures acknowledged and approved by the institutional environment (,,the correct strategic behaviour") spread within the given industry, on the one hand through imitating (miming) the successful organizations (mimetic isomorphism); and, on the other hand, through various industrial organizations and networks. Accordingly, the hypothesis by Deephouse (1996) says: Greater strategic isomorphism is associated with greater regulatory endorsement. Greater strategic isomorphism is associated with greater public endorsement. (p. 1026).³⁰ The author tested the isomorphism-legitimacy relationship on the population of the commercial banks in the Minneapolis-Saint Paul metropolitan region (the surveyed time range is: 1985–1992). In this case, legitimacy was operationalised in a manner that the author tried to measure the evaluation by the regulatory authority and the public opinion with regard to the surveyed organizational population. On the one hand, the regulatory authority regularly categorises the commercial banks based on indices that can be measured well; on the other hand, it also pursues on-the-spot surveys within the framework of its controlling activities, and - on the basis of this - issues official implementation instructions for the termination of the problems. These constituted the legitimacy index of the regulatory authority. Social legitimacy was approached by Deephouse (1996) by analysing the contents of relevant articles published in the local printed press. In addition to the news about banks - the surveyed documents were added by all related letters written by the readers and editorial notes, presuming that all this would reflect the social evaluation even better. The author measured strategic isomorphism through the banks' power source allocation strategy. Under the main

³⁰ Originally: "Greater strategic isomorphism is associated with greater regulatory endorsement. Greater strategic isomorphism is associated with greater public endorsement." (Deephouse, 1996: 1026)

statements of the analysis, organizations pursuing a strategy conform with the strategy of the other organizations are considered by the regulatory authority and the public opinion as more legitimate than those that differ from the established behavioural forms (strategies). Referring to the different power of correlations, Deephouse (1996) argues that the regulatory authority and the public opinion provide legitimacy in a different manner. However, he does not discuss in what ways they are different and how different is the legitimacy that they offer.

Elsbach and Sutton (1992) as well as Elsbach (1994) introduce a qualitative colour spot into the literature of legitimacy, which is dominated by quantitative analyses. Elsbach and Sutton (1992) survey a provocative question in an empirical way: is it possible to acquire and increase legitimacy through illegitimate activities? Our survey covers two radical social movements (the *Earth First*! nature conservation organization, and the *AIDS Coalition to Unleash Power* organization, shortly *ACT UP*). The authors apply the literature of the institutional sociological school and impression management in synergy in order to interpret their empirical work. For their qualitative analysis they used semi-structured interviews and news from the written press, and they also attended meetings of the organizations as participant observers. In the course of processing qualitative data, they applied the analysis logics of grounded theory.

As a result of their analysis, they outlined a process model to show how organizational legitimacy can be acquired through illegitimate actions by the members of the organization. Under the first step of the model, the illegitimate activity gets into the centre of media attention. This time, the tone is clearly negative in the news because the organization gets involved in a kind of violation to the norm. In the second step of the process model the media representatives face the fact that organization challenged in its legitimacy refers to specific structural characteristics. This means that the organization is adjusted to the given institutional environment in a conform manner, it can be characterised with the expected, customary organizations. In addition, the action regarded as illegitimate is passed on by the organization to members and groups that are removed from its legitimate structure. This means that it tries to de-couple from the legitimate organizational structure and from the legitimate organizational objectives the members who can be related to the illegitimate action. In the third stage of the model, they try to create the innocence of the organization and the verification of the

actions through the techniques of impression management. In the course of this, attention is paid to the non-occurrence of negative consequences and the favourable outputs are emphasised. Tables are turning in the fourth step of the process: the spokespeople of the organization highlight the favourable consequences of actions considered as illegitimate, which are in harmony with the legitimate purposes of the organization, and they emphasise that the good consequences would not have taken place either without these actions. The fifth step of the model already presents that the institutional environment (e.g. media) acknowledges the successful legitimacy-winning strategy of impression management, and accepts, what is more, supports the objectives and the activities of the organization.

Elsbach and Sutton (1992) highlight how the tactics of de-coupling or removal can create a ground for the proactive steps of impression management with a view to acquire or preserve legitimacy. They point out that following - in the organization's basic activities - the procedures that are approved and accepted in the institutional environment renders it possible for the spokesperson of the organization to make use of the impression management technique of verification in the case of illegitimate actions. This may also be the result if the organization can prove that it holds the professional knowledge regarded by the institutional environment as legitimate; it has members or representatives who possess the acknowledged and recognisable signs of professional knowledge. In order to acquire or preserve legitimacy, first the technique diverting attention from the negative consequences and concealing adverse outputs comes first in the line among the techniques of impression management; then, based on these, come the techniques emphasising favourable outputs and objectives that are accepted as valuable. All in all, their analysis points to the strategic opportunities of institutional entrepreneurs in influencing legitimacy. The appropriate application of the techniques of impression management can even help to bring negative events and illegitimate actions over to the side of organizational (industrial) legitimacy.

Elsbach (1994) surveys – by combining qualitative and quantitative research methods – events endangering the legitimacy of the Californian cattle raising industry between 1989 and 1992, together with the symbolic management applied by the representatives of the industry for the sake of influencing legitimacy. The applied techniques of impression management are explored based on the written press and semi-structured interviews (following the established theory in data analysis). His analysis

presents in details how the representatives of the industry concerned try to reject and avert the events that question their legitimacy, as well as the negative consequences. Acknowledging though the rightfulness of the raised problems, they tried to make their own role and their eventual illegitimate actions look smaller. It was an important part of the verbal manifestations to refer to the institutional and technical features that showed and emphasised the institutional conformity and isomorphism of the industry and the organizations in question. For example, the socially important objectives of the organizations and the industry, the use of widely accepted and taken over management tools, as well as the outstanding economic performance and technical competence of the organizations and the industry.

Based on the qualitative analyses, Elsbach (1994) selected the stakeholder groups that are the most important from the viewpoint of legitimacy, and made structured interviews with their representatives. The news from the printed press was added to this data source. He separated two dimensions of measuring organizational legitimacy – these were as follows: (1) the perception of the normative conformity of the organization and (2) support and recognition by the stakeholders of the organization. Based on this, he coded and analysed the available texts. He found that the verbal manifestations recognising the rightfulness of the problems proved to be a more effective impression management technique in preserving legitimacy than refusal and aversion. And the same is true of impression management indicating institutional conformity, in comparison with emphasis laid on technical conformity.

Elsbach (1994) also tried to measure legitimacy in a quantitative manner. He defined the above two dimensions of organizational legitimacy in twenty statements; then the respondents ranked (on a 1-7 scale) the statements according to importance. The principal component analysis outlined a three-factor structure. Based on this, the author made a legitimacy scale for prescriptive legitimacy, for internal acceptance and external acceptance. The researcher prepared short, newspaper-like texts about the cattle industry – ideal-typically reflecting the three dimensions - and asked 68 corporate employees in a leading position to evaluate – in their capacity as consumers – the legitimacy of the industry. The independent variables were the form (recognition versus rejection) and the contents (institutional versus technical conformity) of the verbal manifestations. The dependent variables were as follows: the prepared (12-variable) legitimacy scale, as well as the ranking by the respondents in which they evaluated the issued texts as to whether they improved or worsened their perception of the industry's

legitimacy. The quantitative analysis confirmed the qualitative results concerning the differences in the effectiveness of impression management techniques. All in all, the author concluded that – with regard to the organizational legitimacy - the impression management technique of recognition-admission combined with the normative message of institutional conformism seems to be the most effective tool for organizations or industries whose legitimacy is challenged or who want to establish their legitimacy in a preventive manner.

Organization scientists have made numerous empirical analyses on the issue of legitimacy of emerging industries or newly started ventures. I am not going to present them in details, but I am trying to sum up the major messages and statements as follows.

Ritti and Silver (1986) provide important ingredients for understanding the specific role of the institutional entrepreneur taken in acquiring legitimacy. They survey the story of structural innovation, regarded as radical, the process whereby innovation becomes institutionalised, and becomes a taken-for-granted, appropriate and necessary part of the given institutional environment. Their analysis is focused on the mythbuilding section and phenomena of the institutionalisation process. They interpret as myth-building the process whereby radical innovation – being the right answer to the problem in question – is given legitimacy. The myth is about the origin, the function, the objective and the effectiveness (rationality) of innovation. Myth-building is also successful and thus the innovation gets institutionalised if the influential stakeholders accept the myth and the reality mediated through the myth. For this reason, the authors focus their attention to the phenomenon that they call the "dramaturgy of exchange". As a result of their research question, they followed a qualitative methodology (participant observation and interviewing). According to their empirical survey, the new organization allocated - in order to win legitimacy - major power sources to the establishment of exchange relations with the stakeholders of the organizational field that can be beneficial for them, and thus they offer pragmatic legitimacy to the starting organization. For the stakeholders for whom the appearance of the new organization represents a danger they mediated symbolical messages through which they could learn how to adapt themselves to the institutional environment - changed by the new organization - without any conflict or major loss of legitimacy. Another important part is played in the myth-building dramaturgy by the positioning of the newly established organization in a manner that it is shown as the "fierce" representative of solutions to

significant problems. Ritti and Silver's (1986) empirical analysis convincingly supports the theses (regarded as classical) of the institutional sociologist school (Meyer and Rowan, 1977) about the institutionalisation process and the role of legitimacy in the said process.

Human and Provan (2000) surveyed the network cooperation of small ventures – as an innovative inter-organizational phenomenon - and its legitimacy processes. They pointed out that the process of acquiring legitimacy can even start from two directions: from inside, from the organizations taking part in network cooperation; as well as from outside the network. As a result of their longitudinal analysis they established that – on the one hand – there is a need for both internal (within network, inter-organizational) and external (outside the network, institutional) acquisition and maintenance of legitimacy; on the other hand, they hold the view that external legitimacy can be built more durably for acquiring internal legitimacy, but – as against this – acquiring external legitimacy does not yet ensure survival if no internal legitimacy is developed.

Delmar and Shane (2004) operationalised the legitimacy of new ventures with two variables: (1) winning legal registration, (2) making a business plan. The latter was evaluated as an important form of symbolic communication through which the organization sends a kind of a message to its environment in order to prove its reliability and serious business intentions in the customary and expected manner. The business plan can simultaneously be interpreted as the founder's specific story, which tries to mediate an attractive and comprehensible message to the influential stakeholders. According to their quantitative analyses of the population of Swedish small ventures, both winning the legal status and the existence of the business plan improved the survival rate of the individuals in the analysed population.

The question of the research by Déjean, Gond and Leca (2004) was: what strategies are applied by the institutional entrepreneurs of an emerging industry in order to win legitimacy? The survey covered the *SRI* movement (socially responsible French investments). For the *SRI* – being an emerging industry – one of the major legitimacy instruments is the authentic and comprehensible performance measuring tool, which fulfils the stakeholders' (in this case the financial sector) norms and expectations. In addition, it also brings and represents a power position to its representative through the institutionalisation of measuring and ranking – with which the investments are evaluated from the viewpoint of the *SRI*. The authors analysed the interview texts and the collected documents through qualitative software. According to their main

statements, the measuring embodied, on the one hand, the adaptation of the emerging industry in the light of the cognitive expectations of the main stakeholders. On the other hand, it covered the respect of the professional expectations by the managers of financial funds. On the third part, it represented a tool for structuring financial management decisions, which are considered as a basic activity. The evaluation of socially responsible investments is legitimate if it can be expressed in quantitative terms – this is the basic professional expectation and approved cognitive framework of the financial community.

Rao's (2004) analysis of the birth of the automobile – as the legitimate means of travelling - has been quoted several times earlier. The author pointed out the important role of advertising in popularising the new technique and to strengthen cognitive legitimacy (the awareness and the plausibility of the technique) as a positive external effect. He also highlights the legal regulations as a source of legitimacy. What is more, he also regards the attitude of the prevailing political culture towards new ventures as an important institutional variable in explaining the survival of the emerging industry. In this regard I am pointing out that the institutional entrepreneur's "myth-building" activity is not some kind of a strategy resulted from a "cool" cognitive calculation but definitely a political activity. The example of the legitimacy of the automobile shows perhaps in a clearer manner than anything else – that not only a new transportation technique was given social acceptance but a new socio-technological regime was born, which radically changed the every-days of society and economic life, furthermore it got integrated into, and influences the power relations prevailing in society. The automobile-related technological regime sets cognitive expectations towards the conceivable techniques of transportation, thus diverting further innovations into a path dependent direction. At the same time, it is being formed in interaction with such an institutional environment where it is able to shape the selection environment to its own benefit, limiting the chance of regime-challenging technologies to break in (see Kemp, Schot and Hoogma, 1998).

In addition to the work of Rao (2004), the analysis by Lawrence, Wickins and Phillips (1997) about eco-tourism as an emerging industry gives a tell-tale example of the importance of the political-economic dimension of legitimacy. Namely because eco-tourism as an industry means the global commercialisation of nature itself and nature-based recreational services. Thus, it turns environmental services and goods into a market service, which the society also has to accept, and has to recognise

commodification as legitimate. This, in turn, does not only raise the legitimacy of an organization (tourism company) specialising in eco-tourism, moreover, not even the legitimacy of the industry but the legitimacy of the market society, at a global level. The question is whether marketisation is the legitimate manner of preserving the values of nature? Therefore, it is not by accident that the authors emphasise the political nature of influencing legitimacy. The legitimacy of the emerging industry is created and/or hindered in the power field established by the interests of the stakeholders.

2.4.3. Testing legitimacy in the discursive approach

Vaara et al. [2006] (see also Vaara and Tineari [2008]) present a convincing example of the usefulness of critical discourse analysis. Similarly to the institutional approaches, so keen to use media sources for the empirical examination of legitimacy, the authors regard the media as an important legitimation arena. The texts appearing in the media provide an ideal ground for studying the discursive legitimation strategies related to the legitimacy of certain organisational phenomena (in their case, to industrial/market restructuring in the wake of acquisitions and mergers). Theo van Leeuwen identified five discursive legitimation strategies following/upgrading the "grammar of legitimation". The discursive legitimation strategy of rationalisation strives to gain legitimacy (cf. pragmatic legitimacy) by referring to usefulness, i.e. functionality. That of moralisation construes legitimacy by pointing to certain values or a value set (cf. moral legitimacy). Authorisation, i.e. reference to some authority, is also a frequent discursive strategy to gain legitimacy. The discursive strategy of normalisation (in van Leeuwen's model: conformity legitimation) is applied to highlight that something is customary, natural, in conformity with the traditions (for, what is customary and natural, as it should be, will not be questioned or challenged - cf. cognitive legitimacy). The fifth discursive strategy is labelled narrativization, to indicate that legitimation is conveyed through telling stories and creating myths (van Leeuwen calls it mythopoesis). According to the noteworthy conclusion of Vaara et al. [2006], the last discursive strategy typically comprises all the other discursive legitimation strategies.

Hence critical discourse analyses call our attention to the fact that the macrolevel structures are latently inherent in the micro-texts; they impact on them and they are also recreated by the micro-texts. That is, their legitimacy inevitably has a power component/reading. This is obvious in authorisation, as the micro-text can only regard as an authority (and build on it) something/someone having a social prestige from the outset. This is how the macro-structure underpins, and at the same time also limits, legitimation. Narrativization, myth-creation is also obviously linked to the narratives and myths prevailing and dominant in the broader social context. Hence it follows from the above that legitimacy has a macro-level aspect. This so-called socio-political legitimacy does not appear so clearly in either the strategic or the institutional approaches as it can be revealed by the discursive ones.

2.4.4. Main findings of the empirical analyses into legitimacy

I regard the following main statements to be important on the basis of the organizational empirical surveys of legitimacy.

The dominance of quantitative analyses has been existing for a long time, however, lately there has been an increasing number of empirical research activities conducted with qualitative methods (see among others Long and Driscoll [2008], Elms and Phillips [2009], Schepers [2010], Sonpar et al. [2010]). The dominance of quantitative analyses is not favourable as they – on their own – are able to operationalise legitimacy only in an indirect and rough manner; it would be much more fruitful if the researchers first tried to understand the given institutional context in which legitimacy is surveyed, and would only then make an experiment to operationalise and measure the term and the dimensions of legitimacy. Without this, they often use not-at-all convincing indicators for measuring legitimacy. The question lingers: do the stakeholders also interpret the given variable and find it just as important from the viewpoint of legitimacy as the researchers. For the most part, this question is not answered by the structuralist (institutional and population ecological) analyses of the legitimacy. From this aspect, the study by Ruef and Scott (1998) is refreshing and worth being followed.

The social embeddedness – as a term closely related to legitimacy and enabling its measurement – seems to be a step in the right direction in empirical surveys. However, it cannot be ignored here either that the researchers should first try to understand – through qualitative techniques - how legitimacy is interpreted in the given institutional medium; who are the important, influential stakeholders who mainly determine the dynamism of legitimacy, etc. The quantitative techniques could be much better founded on interpretative methods. The procedure of institutional and population ecological analyses that tries to measure social acceptance through media representation seems to be especially problematic. In my opinion, it is very misleading as it puts forward the naïve presumption that the media truly reflects the social opinions at all times. This is generally contradicted by the media-related theories as well, just as the empirical studies themselves that analyse the media representation of agri-biotechnology (see chapter 3.2.). In addition, the society – as a stakeholder – can have a very heterogeneous interest and value system over the given legitimacy issue, which would demand the separation of the main opinion groups from a good analysis. This is also related to the proposition that the majority of the empirical researchers into legitimacy leave various qualitative participation based techniques totally unutilised. Focus group surveys practically do not take place at all, at most, the interviewing technique is applied.

The neglect of qualitative research is all the more sorrowful because the low number of available analyses goes to show how well understanding and model-building can be enriched by the application of these methodologies (see Elsbach and Sutton, 1992; Elsbach, 1994). Qualitative techniques help the deeper understanding of the dynamics of legitimacy as well as the success and failure of the influencing techniques. They also highlight the intertwining of the legitimacy and de-legitimacy arguments as well as the conflict-ridden political nature of legitimacy. Qualitative methods help to conduct a profound analysis of the symbolic management of legitimacy, specific legitimacy rhetoric and discourses. In addition, as shown by empirical works, meaning-making processes are especially important – in the case of emerging industries – in the system-level power dynamics of legitimacy also seem to be vital with regard to emerging industries.

It may be a small but surprising note that although Suchman (1995) has almost never been missed from the list of the referred literature, the empirical works do not even make an attempt to reflect the richness of Suchman's typology. This shows either the superfluous meticulousness of typology or the all-in-all rudimentary status of empirical survey.

3. The biotechnology community

The discovery of the DNS structure, on which the technology of genetically modified crops is based, is merely about half a century old. The first biotechnological enterprise came into being approximately forty years ago, while the first genetically modified plant appeared on the market ten years ago. During this process thousands of biotechnological firms have been established and many industrial branches have taken a new, innovative way, by this, changing their technology, strategy as well as structure. Above all, two industrial branches – the pharmaceutical and the chemical industry – and agriculture need to be emphasized. I interpret their interrelations according to the following figure

(adapted from Giannakas and Fulton (2000), and Kalaitzandonakes and Hayenga (2000))



This figure actually reflects the structure of life science industry. This notion was born in the early 1990s, and meant the synergy-based interconnection of industries that were transforming through biotechnology. The figure really shows the ideal picture of a biotechnological firm. Its supporters suggested that biotechnology not only established a connection between the involved industries; they also accentuated that companies should form a single conglomerate in order to take advantage of the benefits. The firms that adapted this concept flourished very rapidly through acquisitions, mergers and alliances, and became the giant participants of biotechnology. Yet, despite all these efforts, most of them lost interest. The majority of conglomerates have disintegrated since then: the pharmaceutical and the agricultural directions split.

Actually, they did so more definitely than before, because the involved firms used this development for simplifying their profile. Although the figure is rather showing a non-existing company structure, the interconnection of the given areas are and will still be valid.

The arrows in the figure can be interpreted as ownership relations, the interactions of development and production. That is, the figure represents the (possible) structure and elements of a certain market player on the one hand (however, all elements depicted above can be found nowadays only at Bayer due to the facts I mentioned). On the other hand, it indicates the participants showing an interest in new technological and product innovations and their adaptation. In the relation between the sowing seed industry and the chemical industry mainly agrochemistry is involved, and chemical industry is an important component anyway: it hopes to produce plastic and chemicals from genetically modified crops. The newest generation of crops has been developed to produce primary materials for pharmaceuticals and to be consumed as medication. Consequently, the relation between the pharmaceutical industry and the sowing seed industry also became evident. Nevertheless, the figure does not contain the further way of sowing seed in agriculture and food industry, agricultural producers, processors, food industry, food commerce, that is, further vertical interrelations though, (formal-informal) integration does not end here at the level of a single company. Apart from this, the figure does not designate the environmental industry either, which is also a significant adapter of biotechnological developments (for instance, the already mentioned Bayer Group has the distinct Bayer Environment Science Unit within its Bayer CropScience.) Further industries and activities affected by biotechnology are mining, energetics, and waste management. Although not specified in the figure either, they too are existing and relevant connections of the biotechnological industry. This narrowing down is a result of the agri-biotechnological focus of my research.

Industries that are restructuring due to biotechnology are primarily characterised by intertwining. This seemingly "soft" expression conceals very definite processes indeed that cannot be specified by a single time-honoured phrase. It could be called condensation or integration which is a common result of powerful concentration processes and networking. It is not only featured by a decreasing number and an increasing size of market players, which would be the classical economic interpretation of concentration. And not only the growing permeability between the boundaries of the involved industries is a chief aspect. These processes – as well as their accompanying phenomena – result in a new system. At the same time, new concepts have come to life. Such a concept is the mentioned life science industry (see Enriquez and Goldberg, 2001; Powell et al, 2005 a.o.) and its participants are described along new schemes like the theory of the transgenic firm (Baarda, 2000).

The process of intertwining can be observed in the following main transformations:

• horizontal integration: biotechnology, as a new technology penetrating numerous industries, accelerated the intertwining of these industries.³¹

• vertical integration: in order for the technology to turn into products, the participants of the supply chain became interrelated through mergers and acquisitions.

• strategic alliances, networks: innovative biotechnology enterprises involving the new technology and know-how induced cooperations that coordinate the biotech community in a multiple way.

Based on the processes above, this chapter intends to present the establishment of the biotechnological community, and, in a narrower sense, the related areas of agribiotechnology. The term of agribusiness is a few decades old and has become industrialised by departing from agriculture. Due to these processes and alliances, its chain ranges from input supply (sowing seeds, artificial fertilizers, pesticides, machinery and equipments) to food processors and traders, thus it gains a new structure, the form of a complex network (Anon, 2000a). The relevant literature does not attempt to provide an abridged, simultaneous and comprehensive analysis of the areas involved in biotechnology. Investigations of integration (especially of acquisitions related to the sowing seed industry) are rather extensive, and the literature on strategic alliances induced by biotechnological firms is exceptionally abundant. As the theoretical background of strategic alliances is usually approached from diverse theoretical aspects - approaches of organisational sociology, corporation theory, industrial economy, strategic theory, international business policy and game theory (Tari, 1998) -, the examination of biotech alliances has also several theoretical frameworks in literature. With regard to quantity and extension, the analysis of areas influenced by biotechnology is quite uneven and, in comparison with the previous, for instance the study of focus

³¹ An example for this: in order to demonstrate the interrelation of the two involved industries, the CEO of a large company focusing on agri-biotechnology drew a parallel between an envelope and the sowing seed, as well as a letter and biotechnology, where the envelope delivers the letter (Bijman, 2001).

changes in chemical industry is almost tangential and incidental. In addition, researchers examine the process of concentration almost exclusively on the basis of industrial organisation theory, which is extended by a few corporate case studies with a strategy focus; however, these analyses encompass only the period until the millennium. On the other hand, – and this of the two statements conveys the fundamental and structural criticism of the relevant literature – the two directions mentioned above (networking and concentration) seem to be almost hermetically separated research areas. The analysis of these processes within a single system does not exist. As a whole, the literature on biotechnological strategic alliances examines the biotech community from the perspective of relatively small and new biotech firms, while concentration analysts approach this field from the viewpoint of large companies.

The literature on biotechnology is showing a great diversity with regard to the use of terms. The identification of industry level in particular presents a miscellaneous result. Thus, the impact of biotechnology arcing over several industrial branches poses a real dilemma for those intending to draw boundaries between the industries; what is more, difficulties emerge even with marking boundaries between companies. According to Powell and Brantley (1992), it is absolutely incorrect to define biotechnology as an industrial branch. As several authors suggest, it is rather a range of technologies that embraces various fields (Powell, Koput and Smith-Doerr, 1996; Chiesa and Toletti, 2004). In my study the term *biotech industry* refers merely to biotechnological firms, it does not contain other industrial areas "fertilised" by biotechnology. Considering the definition given by one of the leading industrial organisations, *Biotechnology Industry* Organization (BIO), companies whose "primary activity is to apply cellular and molecular processes in order to manufacture products and solve problems belong to this industry...for example large pharmaceutical firms do not belong here" (BIO, 2000), since their primary, main activity is one of the applied technologies. Some authors consider even this industry-approach too comprehensive, and emphasize the differences between agricultural, therapeutic, environmental and other biotech companies, mainly due to the diverse adaptability of their research outcomes (see e.g. Barley and Freeman, 1992). In turn, others would extend the industry's boundaries to further enterprises: although they do not regard large multinational companies and conglomerates as part of the industry either, but they approve of businesses established explicitly in the wake of biotech firms, such as biotechnologically orientated venture capital corporations, legal firms specifying in relevant patents and licences as well as intellectual property rights

(see Powell et al, 2005 a.o.). The participation of the latter – claim Barley, Freeman and Hybels (1992) – does not result in an industry but a biotech community. Particularly at the turn of the millennium, certain part of the relevant literature summarised the large companies that originated from the mergers of firms functioning in the chemical industry, pharmaceutical industry, agriculture and biotechnology, became integrated and mixed the scope of several industrial activities as life science industry. This term, however, seems to be driven into the background for several reasons (such as the disintegration of life science conglomerates and the indirect negative impact of consumer concerns about agri-biotechnology on other biotech areas). The organizational field of agri-biotechnology – being the ground of my empirical research - includes the agricultural elements of the biotech industry and the biotech community, relevant conglomerates as well as non-market players. Thus, it is the aggregate of those participants who are involved through the agricultural application of biotechnology. (The term and content of organizational field see in my research plan in Chapter 4, and its organisation theory background in Appendix 1.) The relation of the above designations is depicted by the following figure.

Figure 2: Biotechnological industry, community, organisational field³²



³² Major participants. The figure does not contain all relations due to transparency limitations. The size of participants in the figure does not reflect their real size, weight etc. The relations are relevant and important characteristics in the figure, the location of other participants in relation to one another does not convey an evident meaning.
Source: Edited by the author

Finally, as for the use of terms, it is worthwhile to point out that researchers still regard biotechnological firms as starting businesses which are about to be launched. These companies are generally designated as biotech firms, the term *Dedicated Biotechnology Firm (DBF)* is also widespread, yet the phrase *New Biotechnology Firm (NBF)* has become ousted. In case of 'agri-biotechnology', both parts of the term are being abbreviated in a variable way, from *agbiotech* to *agbio*.

3.1. Strategic alliances in biotechnology

One part of researches intends to shed light on the formation of the biotech community in terms of theories related to alliances and networks (see e.g. Barley, Freeman and Hybels, 1992; Powell, et al 2005). The other half of literature is testing the various theories, features and proceeds of alliances and networks on biotech alliances. For the last fifteen years, biotechnology has increasingly been a field of analysis in regard to alliances. This chapter primarily serves to present the industry, and, at the same time, it outlines research trends and issues for which biotechnology has been chosen as a field by researchers.

According to Senker and Sharp (1997), strategic alliance is not the right response to all market imperfections that are related to innovation; however, wherever the following five conditions exist, – and these authors regard biotechnology as a field where they do – it is undoubtedly the adequate answer.

1. Complementary resources are at the parties' disposal in a way that tacit, company-specific and often patented knowledge is related to implements that are mutually suitable to one another.

2. For the mutual transfer of these implements a learning process involving personal and relatively close relationships is necessary.

3. Rapidity and

4. Flexibility play a significant role. The latter means that the transformation of interorganisational relations – termination, renegotiation etc. – may occur more easily than organisational integration and merger. The parties understand that the partnership involves some risk but it has characteristics that are even more important than the actual result of cooperation.

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5. The relationship is characterised by reciprocity and trust – partners suppose that opportunism will get its just deserts. The basis of trust is the obvious formulation of intellectual property rights (Senker and Sharp, 1997).

Although biotechnology is showing similarities to the launch of semiconductor or IT-firms with respect to alliance formation (e.g. swift technical change, the presence of small innovative firms, significant R+D expenses, the great emphasis of venture capital, rapid growth), there are spectacular differences as well, which further enhance the motivations of cooperations. There is a divergence concerning the persons establishing the firms: the companies of the IT-industry were founded by engineers that had worked at other firms earlier, thus it is most probable that they were more knowledgable about how to market a product or manage an organisation than researchers and scientists who established biotech firms. Moreover, in case of IT firms a tangible research output, the product prototype was soon made, while in biotech researches that hardly differ from the basic research this does not occur. This preserves the lack of product-related management skills. Besides, the R+D period is much longer, which is partly due to the status close to the mentioned basic research, and partly because market access is typically preceded by a long authorisation procedure. Since biotech products get directly to the final consumer - farmers, physicians, etc. (though microelectronic instruments are usually components of a larger system), - the marketing of these products is more expensive. The market of several biotech products is narrower, thus the economies of scale that is so important in the success of the electronic industry does not play a major role here. Furthermore, large companies of the IT industry possessed skills and tools through which they had an easy access to new markets opened by launching enterprises. On the contrary, large companies of the chemical and pharmaceutical industry as well as agriculture hardly embarked on their own biotech R+D then, this way, they were not able to become players of this market on their own. And this is exacerbated by uncertainty in regulation and the opposition of public opinion: regulators and consumers do/did not see such a high risk in electronic products as in agbiotech products (Barley, Freeman and Hybels, 1992).

3.1.1. Motivations of alliances

The three-decade history of alliances induced by biotech firms has been studied by relatively many researchers who outlined particular trends, described definitve phases and provided the viewpoints of distinct participants. The common ground of their work seems to be the interpretation of the very first decade which is regarded as a separate unit by almost all studies. The period of 1975-1987 is characterised by an extremely rapid rise in the number of biotech firms and the same refers to the establishment of alliances as well. The process of the establishment of firms was supported by ambitious researchers, the abundance of the then easily available venture capital (Brantley and Freeman, 1992) as well as the formation of strategic alliances. The key factor of these early cooperation agreements was the asymmetric distribution of technological, organisational and financial resources (Orsenigo, 1989; McKelvey, 1996; Hagedoor and Roijakkers, 2000).³³

These agreements can be described as "marriages of convenience" (Senker and Sharp, 1997), in which parties provide their complementary resources as dowry, and the basic prerequisite for survival is the formation of these matrimonies as well as the supply of missing resources. Biotech firms open a window on technology (Forrest and Martin, 1992; Barley, Freeman and Hybels, 1992;. Senker and Sharp, 1997; Chiesa and Toletti, 2004). They guide large companies to the mysterious world of molecular biology, where these companies have no previous experience or relations. These companies were bound by the tools, know-how and skills determined by their earlier investments, and the dependence on this established route hampered their sudden entrance into a new, multidisciplinary and complex research field (Deeds, DeCarolis and Coombs, 1999).

Biotech firms did this while abounding in ideas, technology and scientific knowhow; nevertheless, they were short of financial resources, corporate and management competences and – being starting companies and part of a starting industry – legitimacy. Multinational companies longed for high-ranking researches; this was the only way they could gain access to basic and applied researches (Gambardella, 1995). In order to finally create a product from this knowledge, the know-how and resources of a wide and diverse range of organisations were needed: apart from the above, the contribution of universities, state research institutes and venture capital corporations was necessary in the first place (Powell et al, 2005).

 $^{^{33}}$ At the same time, however, the possibility of studying the early alliances is doubted by several authors. The 1980s witnessed numerous informal, non-documented relations; what is more, – Barley, Freeman and Hybels (1992) claim – these outnumbered formal alliances. In the USA, the establishment of formal alliances was motivated by a few important external, institutional factors from the end of this decade: the 'laissez-faire' regulation philosophy at the time of Ronald Reagan's presidency, the weakening of the Federal Trade Commission (FTC), and the introduction of a new law promoting cooperation among organisations.

Nonetheless, participants and motivations as a whole are a lot greater in number and more complex, and they also change in time. Senker and Sharp (1997) distinguish three phases concerning the objectives of the participation of large companies. Becoming acquainted with the opportunities of biotechnology is the main goal of the starting phase. Parallel to this, the establishment of private biotech research competences and laboratories as well as the acquisition of technology have already begun within doors, namely with a double goal. On the one hand, these companies intended to ease the mutual dependence within the alliance, although it was obvious that – due to the technology's novelty, its rapid change as well as its complexity lying in its possible impacts and potential intertwinings with other areas – it would be too great an undertaking to embody all necessary functions and competences within a single organisation.

The other, more practical, reason for establishing private biotech research capacities was that only this way was the company able to understand, follow, assess and control what the allied biotech firm created. By the end of the 1980s almost all American and various European large companies have launched a private molecular biology research programme (Henderson and Cockburn, 1997; Zucker and Darby, 1997). In this phase it was an important task to assess whether the new technologies holding out promises of great advantages could really be sources of future product development and forthcoming profit. The authors designate the third phase as the period of market entry (Senker and Sharp, 1997).

Powell et al (2005) show the historical dynamics of biotech alliances by using the analogy of a dance party where dancers, couples and music are changing on a regular basis. By the latter he means the types of alliances: research, commercial and financial cooperations and licence agreements etc. alternate, prevail or are thrust into the background. From his historical review, that is similar to the one above, I again emphasize the second phase, which takes the perspective of biotech firms into consideration. Just like large companies, also biotech firms acquired some competences during the initial research phase. In this phase they are becoming independent and stabilised through the involvement of state R+D funds and venture capital³⁴, yet most of them do so because they realise that despite their goal they will never be able to develop

³⁴ This change is indicated by the fact that in the early 1990s all biotech-based products on the toplist of pharmaceutical sales were distributed by pharmaceutical companies, in 10 years the first 10 products were developed by biotech firms out of which 5 were also distributed by the biotech firm (Powell et al, 2005).

into an integrated institution that is able to implement all steps of biotech product development and marketing on its own.³⁵ There is no biotech firm, what is more, no participant at all in this organisational field that would be able to develop a full spectrum of scientific, organisational and management competences on its own. At the same time, in the historical development of the increasingly important biotech firms it is a significant factor that, according to the studies of Powell (1996), mainly their central role played in the alliance network contributes to their stabilisation, not their own merits. They are capable of forming dense and diverse relations, in other words, "polyphonic" partnerships.

That is, they establish simultaneous connections with diverse allies (e.g. they can concurrently obtain financial sources from large companies, state research funds and venture capital corporations) in several functional areas (technological, research, commercial etc. cooperations).³⁶

At the same time, the process of stabilisation is making these firms targets: they appear as potential human resources or object of acquisition. However, just like shaking out, the creaming off and acquisition of more attractive companies have not become a standard either among biotech firms.³⁷

Despite these developments – the strengthening of the forming industry and its firms – and the fact that a few large companies were forced to take just the opposite way and were thrust to the periphery of these processes, the pattern of tight connections still survived. Even at times when complementary roles and resources were not that exclusive anymore. According to Powell et al (2005), this indicates that the original motivation lying behind the exchange of complementary resources has gained a broader sense: the involved companies seek new forms of R+D alliances and common product developments in these innovation networks. Unambiguously, all this refers to the United States and Canada. In Europe not only the establishment of biotech firms occurred later:

³⁵ A frequently cited exception is Amgen that developed into a significant and independent

pharmaceutical participant. ³⁶ Powell et al (2005) identify four alternative explanations of connection that lie behind strategic alliances. Characteristic ways of building alliances are the ones that (i) rely on the accumulation of benefits, (ii) are based on the mutual attraction of similar firms (homophylia), (iii) enforce the adoption of trends as well as (iv) aim at multiconnectivity. In the latter logic – with a growing number of industrial and other participants – the diversity of connection gained ground.

³⁷ Soon it became obvious to large companies that subsequent to acquisitions key figures usually quit the firm and the company's know-how and value embodied in employees get lost (Forrest, Martin, 1992). What is more, the employees of biotech firms did not only quickly leave the new owner behind, but they got to stand on their own feet and thus created new competitors. This is how the employees of Hybritech established more than 40 firms shortly after the company had been taken over by Eli Lilly (Powell et al, 2005).

large companies regarded this area with proviso, and they started their more significant research investments only in the mid 1980s, after a decade of hesitation. They continued to organise these investments still along their traditional university-related and scientific connections (Senker-Sharp, 1997). At the same time, European biotech steps vary; firms do not enter this path on the basis of a homogeneous strategy. In Great Britain partners were eager to find their match within national borders through state mediators; on the contrary, Swiss, German and French large companies were searching for (also) American cooperation partners. Literature considers the development of European biotech firms quite slow for another decade in comparison with American processes (Arundel, 2001). The reason for this may be that there is a lack of venture capital and an enterprising spirit on part of researchers, although the involved countries' central policies for technological development intend to promote this area. Nevertheless, in the last decade differences dropped to a minimum (Senker-Sharp, 1997).

3.1.2. Legitimacy within the alliance

According to relevant literature, the establishment of interorganisational relations is an emphatic tool of creating legitimacy. Activities done within the economy, on the market and within company boundaries – that is, not only at abstract research institutes and mystical laboratories anymore – gain the partnership of the economy's and the market's accepted, mature players. These connections are spectacular and visible, thus they make the biotech firm easily recognisable to further participants, in other words, they cast light upon its existence.

Alliance relations also automatically endow biotech firms with *associate legitimacy* (Baum, Calabrese and Silverman, 2000). The honour that surrounds legitimate and accepted partners within the alliance is cast onto new participants (*legitimacy spillover*, Kostova and Zaheer, 1999); the mature company gives biotech firms a share of its experience-related privileges, and as a reference it promotes their embedding as well as the establishment of their own legitimacy.

This way, legitimacy is one of the resources and complementary tools that are available through the alliance. The alliance not only provides strategic and operative know-how, steady exchange relations, innovative competences, financial resources etc. but also makes sure that the firms' operation is accepted and approved of by external observers and partners (Baum és Oliver 1991), and that they can enjoy the authenticity and quality of goods and services that potential buyers, suppliers, employees, cooperation partners and investors assume (Hannan and Freeman, 1984; Stuart et al 1999).

Legitimacy, just like the majority of other resources, is inevitable for operation and survival, it is an invaluable help at the start. It is an important difference, however, that while other resources may be present even in the long run exclusively as the partners' contribution, in regard to legitimacy biotech firms must become independent: they need to establish it for themselves. Obviously, the alliance network continues to serve as a protective net further on.

It may be worth highlighting certain ambiguities. Such an ambiguity is that all this is relevant not only at organisational level, in case of a given biotech firm, but the same can be stated at the level of the biotechnological industry as well, which is the primary level from the perspective of my study. Another exciting ambiguity is that this gained, indirect legitimacy is a product of the interorganisational network, and, the other side of the coin is that the risks originating from the lack of legitimacy need to be minimised. The alliance serves as a buffer (Baum, Calabrese and Silverman, 2000) and sends favourable signals when the characteristics and competences of the company and the industry have not evolved yet or are not in the least publicly known. Again, the latter one indicates another ambiguity of the creation of interorganisational legitimacy. On the one hand, the company's competences flourish and become absorbed within the strategic alliance (a new competence could be e.g. a way of integrating into the network and managing the relations), its existence and legitimacy may stabilise through peculiar learning processes. On the other hand, partnerships may have an impact on the firm's image and perception by other participants, independently of the community's or the company's features; and this too is a legitimacy factor.

Researchers approaching biotechnology from the perspective of alliances and networks did not examine or only partly studied the legitimacy aspects of interorganisational embeddedness. Handling the legitimacy effects of the network's existence as an axiom, their attention has rather been drawn to the correlation between the features of the alliance net and certain success features of biotech firms and the biotech industry. Thus, it is a fundamental condition in researches that network membership is a legitimacy factor. Consequently, legitimacy can be found in these researches in details or indirectly (through survival, successful partnership etc.). The following explanations that relate to the evolution of the industry and the organisational field – and are based on population ecology – have to be emphasized.

According to the expectations of a large proportion of analysts, the vigorous foundation wave of biotech firms in the USA in the 1980s should have been followed by a wave of failure or shaking out (Powell, 1996). On the contrary, only about 9 percent of starting companies have ceased functioning during the first 15 years of biotech industry, which can be considered a very low mortality rate in comparison with other industries (Barley, Freeman and Hybels, 1992). They see the reason for this relatively steady survival in the formation of alliances. The liability of newness and smallness among biotech firms is less characteristic (Barley, Freeman and Hybels, 1992; Powell 1996; Baum, Calabrese and Smith, 2000). Powell, Koput and Smith-Doerr (1996) rather mention the danger and consequences of the liability of disconnectedness in this context, and presume the failure of biotech firms that are less linked to other organisations through alliances.³⁸

³⁸ Nevertheless, in relation to this, Baum, Calabrese and Silverman (2000) make it clear: success is affected by the quality of the alliance system. In order to form an efficient network configuration, according to the authors, the following aspects have to be taken into consideration. The rise in the number of cooperation partners may result in a superfluous multiplication in case they provide the same information or complementary resources. Thus, the circle of partners is more extended than needed - or vice versa: it has little variety compared to the number of its members -, while its operation entails higher costs. Although the rivalry brought about by the duplication of roles may make the network more flexible and innovative, competitive interests may also destroy it. More and more authors suggest that it is simplifying and too general to explain the survival and growth of biotech firms exclusively by the existence of alliances and cooperation. They wish to identify other factors of successful functioning as well by examining partly company-related, partly environmental features. Many studied the combination of founders and researchers from among company-specific features (see 2.1.3). The role and impact of strategic decisions - the selection of market, product, and projects - have been analysed by Cooper (1998) among others. Like Niosi (2005), he asserts that the growth of a company is largely influenced by the field of biotechnology in which the company functions. Without any exception, growing enterprises are doing pharmaceutical researches and developments, and the least developing firms work in the agbiotech field. Niosi emphasizes that the initial constellation has far-reaching effects: once the initial conditions are established, a certain level of structural impotence is reached. This dependence on an established route can be characteristic of new companies as well: through contracts, learning processes and other elements the company gets set on a certain course, which is binding for the company. Reuer and Zollo (2005) also examine the factors of success, though, from another perspective. Their scrutiny also intends to prove that the disintegration of research alliances is not definitely a failure but is may indicate favourable processes as well. By this, they question the conventional approach of measuring the fruitful existence of partnerships by its durability. Lately, some explanations have gained ground suggesting that these changes reflect the neutral, what is more, the beneficial developments of cooperations. It may namely occur that a relation is terminated because participants have learned from each other what they could. There may be new investments in the background, it is possible that new opportunities have occured in the meantime that are exploited or their goals are similar to an extent where their complementary feature gets lost.

3. 2. Integration and concentration

Agbiotech expects an analysis that is arcing over several industrial branches. Biotechnology providing the technology and the product; agriculture that is using it (to be more precise, sowing seed producers and distrubutors); pharmaceutical, plastics and environmental industries that are based on the same research outcomes as well as the representatives of agrochemical industry manufacturing complementary products have all been present lately in large companies that dominate the market. As a result of mergers and acquisitions in the 1990s, and despite the withdrawal from the pharmaceutical industry that occurred at the turn of the millennium, today this field is extremely concentrated. Only four large companies – known as the *Gene Giants* – are dominant: Bayer, DuPont, Syngenta and Monsanto. They appear among the giant firms in all relevant industries, and have a total market share of 23-100 percent per industry. They involve chemical, agrochemical, sowing seed and biotech firms; beside subsidiaries, their connections are multiplied by joint ventures and strategic alliances.

The process of integration and concentration are specific features of biotechnology on the one hand³⁹, and independent processes occurring in industries and the world economy as well as the result of global competition on the other. Therefore, it is a phenomenon amplifying the vertical integration of the so-called agrofood chain; though, it is not the only explanatory factor.

3.2.1. Concentration antecedents and trends

Transformation has occurred along the following main steps. I developed the following classification, timetable and summary of the sequence of steps on the basis of studies by King (2000) as well as Brennan, Pray and Courtmanche (2000), the analysis of the involved industries⁴⁰, just as articles from Anglo-Saxon business media⁴¹.

Most of today's giant sowing seed and agbiotech companies have been bound to the pharmaceutical or chemical industry by their fundamental activity.

 ³⁹ Great uncertainty, significant requirement for R+D input, characteristics close to basic research, long period of development, licencing and market access etc.
 ⁴⁰ See e.g. Kindinger, 1998; Kalaitzandonakes, 1998; Hayenga, 1998; Kalaitzandonakes and Hayenga,

⁴⁰ See e.g. Kindinger, 1998; Kalaitzandonakes, 1998; Hayenga, 1998; Kalaitzandonakes and Hayenga, 2000; Fulton and Giannakas, 2001; ERS, 2004a and 2004b.

⁴¹ See e.g. Anon, 1997; Grant, 1997; Gillis and Swardson, 1999; Anon. 2000b; Eichenwald, Kolata and Petersen, 2001; Weissman, 2004.

1. The relative stagnation of the chemical industry in the 1980s resulted in the sale of chemical production at many companies. This freed up capital: it provided sources for diversification and entrance to other industries. It occurred in two ways: these companies joined new industries either through R+D activities, or they acquired existing firms. This is well demonstrated by the following examples. International Chemical Insdutries (ICI), the British chemical industry separated a chemical department under the same name, and established a distinct company, called Zeneca, which focuses on the production of pharmaceuticals, pesticides, sowing seeds and on agbiotech. The American Monsanto not only separated but also sold its chemical activity in order to be able to concentrate on biotechnology. DuPont sold its oil business and in two parts acquired Pioneer Hi-Breed which was the greatest player of contemporary American sowing seed industry.

2. In addition, this period is the time of mergers of large chemical and pharmaceutical companies. Such an example is the establishment of the firm AgrEvo that was launched by the German companies, Hoechst and Schering, and produces agricultural and environmental products. Later, (after the acquisition of two biotech firms and four sowing seed companies) also Rhone-Poulenc joined AgrEvo, thus Aventis was formed.

3. The next logical step for chemical factories already involved in agriculture was the acquisition of sowing seed companies, since their products are complementary.⁴² Beside acquisitions, also alliances were formed. Such an alliance was the common project of Monsanto and the American sowing seed giant, Cargill, where the aim is the "development and marketing of quality foodstuffs" (Monsanto, 2004). This meant a quick access to large stands, to new species still under development, to the capital and other tools necessary for cultivation efforts as well as the intellectual property and know-how of smaller firms at the same time. In only four years – between 1995 and 1998 – almost 70 sowing seed firms were acquired or involved in a joint venture by a group of multinational companies.⁴³ At the same time, chemical companies had been eager to participate in the sowing seed industry earlier as well: the presence of chemical plants on the sowing seed market is illustrated by Chart 5.

⁴² This was not the first outlook of chemical works toward the sowing seed industry. The 1970s show a similar wave of acquisitions; in the USA a new patent law protecting the results of plant breeding suddenly made these firms attractive.

⁴³ The most were acquired by Monsanto, which particularly shocked the market. With an acquisition "campaign" in 1998 that lasted almost eight weeks, the company that had not been known on the sowing seed market before became the largest player of all involved industries.

5. Using new biotechnological R+D activities simultaneously in pharmaceutical production and agriculture is an idea that led to the formation of giant life science conglomerates. Companies merging in succession hoped for an effect of technological and business synergy.

6. Since then, the majority of integrated companies has considered the life science strategy an "evolutional accident" (Thayer, 2001). No sooner had large companies merged, than they separated and sold their sowing seed and crop protection concerns.⁴⁴ As an explanation they listed (i) the absence of expected R+D synergies; (ii) profit uncertainties resulting from the miscellaneous consumer perception of genetically modified foodstuffs as well as the potential damage cast on their reputation; and (iii) the possible negative reactions of regulating authorities and market surveillance organisations that they intend to prevent, since market concentration has hit an all-time record in case of some cereals (King, 2000). Thus, Monsanto and Upjohn separated shortly after their merger; Monsanto left behind its pharmaceutical activities and continued all its activites related to crop protection and sowing seed industry. Similarly, the freshly merged Aventis separated its agricultural branch and established Aventis Cropscience that it rapidly sold soon after. Thus Bayer, the buyer has become the only life science company, though it is not using this label.

Table 5 shows how the market's current giant players were building through acquisitions and mergers that arced over industry boundaries.

With concentration and expansion – using the definition of Senker–Shapr (1997) – horizontal and vertical integration as well as conglomerate merger took place. A horizontal example is the merger of starting biotech firms, while vertical integration is characteristic of acquisitions of R+D as well as in the supply chain, that is, the acquisition of the majority of the sowing seed industry through companies creating new products. (This has a multiplying effect: the acquisition of suppliers, sometimes even of producers and farms comes next.) I regard it as a conglomerate merger when companies of different industries find each other.

⁴⁴ At the same time, a few chemical companies turned into an agricultural direction instead, and backed out of the concentrated pharmaceutical industry that required significant R+D input.

	Bayer	Dow Chemicals	DuPont	Monsanto	Syngenta
Conglo- merate	Aventis AgrEvo Rhone-Poulenc			Seminis	Novartis AstraZeneca
Agro- chemistry	Hoechst & Schering	Dow Elanco			Ciba-Geigy Sandoz
Biotech	Plant Genetic Systems Plant Tech	Mycogen Ribozyme Pharmaceuticals	Human Genor Sciences Curagen	Agracetus n Calgene DNA Plant Techi Ecogen Millenium Pharmaceutical	n. Mogen Int'l Japan Tobacco
Seed	Nunherns Vanderhave Plant Genetic Syst Sunseeds Cargill Us Limagrain Pioneer Vegetab Genetics	ems Mycogen United AgriSeeds le	Pioneer Hybrinova F	DeKalb Asgrow Holden's Found. Seeds Cargill Int'l Petoseed Plant Breeding Int' Poval Sluis Semini	Advanta Northurp-King S&G Seeds Hilleshog Ciba Seeds 1 Rogers Seeds

Table 5 Ag-biotech concentration and integration: mergers and acquisitions

Source: RAFI [1999]; Falcon és Fowler [2002]; ERS [2004a, 2004b]; ETC Group [2005, 2011] nyomán

Analyses written on industrial organisation theory fundamentally explain the enduring integration that has been intensive until now but lost impetus mainly due to the currently significant concentration, and the growing presence of multinational companies by the following factors:

1. economies of scale and variety of scale;⁴⁵

2. protection of intellectual property rights (IPR) that provides the positions of limited monopoly for companies or individuals possessing certain rights;⁴⁶

⁴⁵ Economies of scale work toward concentration by growing production through falling average costs, while variety of scale tend to lead to concentration due to lower total costs of joint production when the costs of separately producing two or more product types are summed. That is, a larger and more diversified company can produce at lower average costs, which is an effective motivation for growth. Indeed, companies that miss the chance take the risk of being ousted from the market by a lower-cost, bigger rival.

⁴⁶ According to underlying argumentation, IPR serves as a motivation for its possessor to do further research, and to invest capital in the creation of similar intellectual products in order to exclusively enjoy concomitant privileges. This may promote both vertical integration and the formation of tighter strategic alliances at the same time. If the content and limits of IPR are well described and defined by the regulator, the formation of an alliance is more likely, since the transaction costs of negotiations, monitoring and the reinforcement of agreements are lower. In case IPR has so-called 'back doors', they may be used; or the intellectual property right refers to intangible goods that are difficult to trace anyway and relevant agreements are hard to implement – then vertical integration is probable (Giannakas and Fulton, 2000).

3. on the demand side the substitutive and complementary feature of biotech products. Genetically modified plants and appropriate chemicals developed exclusively for them are related to complementary products: these plants can grow optimally only with these products and can "bear" only their presence. Thus, this closely related, complementary pair of products was created by agbiotech itself. This directly results in the merger of cereal and chemical companies originating from different industries. Special literature highlights the escalation strategy, – the companies' route of escaping forward – when they devote large sums of money to R+D in order to gain a leading role on the market. As Giannakas and Fulton formulate: these companies are eager to leap-frog over their competitors and become dominant firms (Giannakas and Fulton, 2000). They become "technological leaders" in a market segment through successful R+D investments and provide new or further developed products (King, 2000). This may be profitable only if the product is a close substitute for the rivals' products. Literature clearly treats the species, which are resistant to pesticides, as well as their chemicals created by agbiotech as substitute products for traditional species.

4. Others, such as specifications of risks and regulators, a growing emphasis on quality assurance, costs of compliance with the rules, the length of innovation life cycle, biotech breakthroughs, the expansion of the stock exchange, a certain philosophy of ,,the bigger the better" (Brennan, Pray and Courtmanche, 2000).

3.2.2. Legitimacy through integration and diversification

In managing legitimacy the three directions defined in Chapter 2. – the establishment, maintenance and retrieval of legitimacy – are completed by a fourth element in Tilling's typology (2004) which is remarkable in case of conglomerates and diversification. In his opinion, the extension of legitimacy is a separate category. He appropriates this term for the entrance or transition to new markets and industries as well as a renewed relation to an existing market or industry.

The actual player is taking the legitimacy acquired in a given area to a new field. In this case his own merits are projected onto his own further activities, which is comparable to associate legitimacy. Probably, the moral element of the Suchman legitimacy typology may relate most directly to this extension. Within that, for example procedure legitimacy – following the right way – can be associated: after the starting activity of a certain company the legitimacy of the new activity can be presumed as well, since it is the same organisation with the same set of values, system of standards and policies. Inevitably, all this requires a more complex assessment, especially if diversification occurs through the acquisition of other organisations. Anyway, in case of large companies doing agbiotech developments and producing such products it is important to mention legitimacy originating from the companies' earlier activites as a possible source of legitimacy.

Or quite on the contrary: the delegitimacy argumentation which, in case of certain biotech firms, originates from earlier problems related to the chemical industry (accidents, production of war equipment)⁴⁷

This piece of analysis on the community of biotechnology is part of a larger introduction to the formation and development of this organizational field [see Matolay, 2006]. Impact of the biotechnology community on the food supply chain is looked at in details in the following paper [Pataki–Matolay, 2008].

Although I do not wish to describe the diversity of the topics or the research trends, I wish to review the main trends that affect the various aspects and stakeholders of agricultural biotechnology and are relevant for legitimacy, although generally indirectly or only in relation to particular components.

The main issue of a major part of the researches is the new regulatory tasks brought along and triggered by biotechnology. The international and national dimensions of such public political research activities are inseparable. The international competitiveness of the biotechnology community and different national regulations suggest dilemmas. They relate to sensitive international economic and political issues primarily in relation to the European Union and the United States, and partly concerning the so-called developed and developing countries.

With regard to the EU and the USA, that reflects different assessments of genetically modified food products by society, and their consequent economic conflict of interests, which have also led to a conflict within the framework of the World Trade Organisation (WTO). The key issue between the developed and the developing countries is, according to the literature, the question of ownership rights. The interests and value sets of developing countries, rich in biological resources (biodiversity), and of developed countries giving birth to the biotechnology industry and the power position thereof are at stake in the new international regime. The legitimacy aspect of this

⁴⁷ Monsanto is still being attacked today because of its active agent called 'Agent Orange' used in the Vietnam War – this element of its history is often highlighted by anti-GMO activists.

problem involves a fight in the use of the word as well: the question is how regulations governing the biological resources of developing countries (ownership right, right of utilisation) will develop and which concept will be used generally. It is unknown yet which of the two terms of *bioprospecting*, indicating the seemingly neutral effective utilisation of the agricultural biotechnology companies of developed countries, and *biopiracy*, with its strongly negative connotation, will win.

The public political research trend was clearly the result of the social pressure, which undoubtedly appeared in the EU Member States and questioned agricultural biotechnology from the side of the consumer, a most important actor for all economic sectors. The majority of the technical literature considers the lack of confidence of EU consumers towards GMO products containing genetically modified organisms and the manufacturers thereof (lack of social acceptance) a regulatory problem, and looks for a legal or regulatory solution (food safety, consumer protection policies, product labelling are recommended) and covers the factors of social legitimacy and de-legitimacy or its process in the organisational field, or the corporate strategies focusing on it in passim if at all.

The technology studies reflect important aspects of the public policy research trends of agricultural biotechnology. They clearly focus on one of the aspects of social acceptance, specifically the correlation between technology policies and democracy, and the possibilities and degree of social participation in agricultural biotechnology developments. Those research papers already point out dimensions of the disputes around the social acceptance of agricultural biotechnology such as risks, uncertainty or the nature of sufficiently satisfactory evidence.⁴⁸. Certain studies analyse also the power and institutional aspects of disputes⁴⁹, and also point out that what is at stake here is the legitimacy of technological and scientific progress. In other words, the focus of analysis is raised to the level of a socio-technological regime .

⁴⁹ Such actions include, for example, attacks of biotechnology companies against the stricter EU regulations that are based on the principle of prudence. This category includes research analysing the close relationship between science and industry, and the criticism, whereby research financed from public money generates private profit [Holt and Bullock, 1999]. The analysis of the legitimacy problems of the European agricultural biotechnology regulations also relates to the same category, because the EU itself, and its legislative institutional system suffer from a legitimacy crisis [Skogstad, 2003].

4. Empirical Research

The appearance of agricultural biotechnology induces radical changes. The technology does not affect only the products and the production process, but also generates fundamental transformation in the industry and introduces new activities, new concepts, new impacts, new rights and deprivation of rights at the same time. It transforms agriculture, re-interprets its competitiveness, connects industries that had no connections before and reshapes their market structure. At the same time, it triggers changes in society, in the power processes and the development of new structures. It entails global consequences in society, in the economy and in ecology. All those together also bring along changes at system level: a new socio-technical regime emerges.

Based on the above, the agricultural biotechnology *organisational field* could be a suitable level of examination to understand the legitimacy strategies of agricultural biotechnology companies and the power dimensions and systemic changes. As described in Chapter 2, biotechnology is not a separate industry with clear-cut borderlines. The concept of the organisational field captures and reflects the diversity of those organisations better than any other approach (Powell et al, 2005), and describes their integration. It draws attention to correlations; it is a good field of examination to conclude how the various actors and organisations constitute and create the mutually detected and used field of social and economic activity. As Hoffman (1999) states, the organisational field is the centre of the disputes where those having competitive interests discuss the key issues and the interpretation thereof (p. 351).

A *qualitative research methodology* is ideal for understanding and for identifying the abundance of factors and drivers. This chapter presents the questions and prior assumptions of the research, and reviews in detail the research process and methodology.

4.1. Purpose of the Research

I analyse the set of legitimacy arguments relating to agricultural biotechnology in Hungary in my Ph.D. research. I am trying to describe the development of this industry, in the crossfire of discussions, which is partly creating its products at the moment, and partly trading them already with a huge profit in many places. What makes it legitimate (or illegitimate) among regulators and consumers (agriculture, food industry and ultimate consumers and customers) outside the community of inventors (researchers and manufacturers)?

The purpose of the research is hence to disclose and understand the relevant drivers, activities and strategies in Hungary that focus on the establishment of the social legitimacy of this emerging industry. From a different aspect the same thing can be described as follows: The objective is to disclose and understand the dynamism of the institutional and organisational field in which the social acceptance of agricultural biotechnology as an industry is constituted and construed, and to identify the legitimacy arguments of the actors, and to understand their involvement and their capacity for influence assertion (power position).

I am aiming at answering the following research questions:

1. What stakeholder groups' activities shape agricultural biotechnology: Who are the players and active participants of what is known as the organizational field of agricultural biotechnology? What actors take part in the legitimization (or delegitimization) process?

2. In other words, how do the stakeholders shape the economic and social acceptance and legitimacy of agricultural biotechnology? What arsenal of legitimization tools, arguments and ultimately strategy do they use to establish the legitimacy of or, on the contrary, to delegitimize agricultural biotechnology?

I place my research in the field of critical social studies and more specifically among the critical organisational studies. The dynamism and characteristics, and especially the values and power relations of the social integration process, which are fundamental factors of economic use and utilisation (e.g., acceptance by consumers as a legitimate product, followed by their demand for it), may be observed effectively only in relation to an emerging industry. It is my theoretical standpoint that each individual product or service and, therefore, each economic industry practically carries the logic of some socio-technology regime in itself. Consequently, the strategies of the companies of a particular industry do not only mean and reflect the preservation of the market positions or competitiveness of the relevant products or services, but also maintain and try to preserve that particular socio-technology regime as well. To that extent, therefore, the corporate strategies and, what is more, the products themselves also have a social legitimacy quality and political (power) relevance.

4.2. Research method

In line with the research objective, the research methodology is based on qualitative methodologies, which facilitate deep drilling embedded in the context for disclosing and understanding phenomena and dynamism. I placed this research in relation to the interpretative school of social scientific approaches, which is based on methodologies stemming from relativist ontology and subjectivist epistemology.

The sources of the research methodology were two trends: Critical Discourse Analysis (CDA) and Grounded Theory (GT).

The CDA stems from the linguistic research activities of 1970s, more specifically from research focusing on the role of the language in structuring social power relations [Géring, 2005]. According to van Dijk, "the discourse having a role in the (re)creation of power, or the questioning thereof" [2000:442] is in its centre, where power means power exercised by the elites, whether institutions or groups, triggering social inequalities (whether political, cultural, ethnic, racial, gender or class inequality) [van Dijk, 1993]. Thus a discourse analysis analyses the role of language use in creating and reproducing power relations [Vaara et al., 2006]. It is critical and, in that regard, historically, it carries the legacy of the Frankfurt School and Habermas. By now its subject matter, on a wider scale of interpretation, is the disclosure of the interconnectedness of social life and social practice [Géring, 2008]. Van Dijk refers to it as a switching research, and interprets it as "a form of intervention into social practice and relations" [van Dijk, 2001, quoted by Zombory, 2008:413]. It is a reflective research methodology, where the researcher is aware that a scientific activity also involves power: "it is part of the reproduction or alteration of power relations", and enters that power field on the side of the dominated groups [ibid]. It is primarily interested in the "matter" and not in theory-building, and van Dijk refers to it as "matter-oriented" research methodology [p. 413].

These days not only the social and political sciences rely on critical discourse analysis, but the methodology is used more and more frequently also in organisational studies. Along with various considerations, it follows numerous potential trends and practices; some of its potential typologies are summarised in Hungarian by Géring [2005]; its methodological development and the discursive turn of social sciences are described for example by Géring [2008]; while the detailed theoretical foundations and methodology of certain CDA trends are covered by Wodak and Meyer [2009] and Wood and Kroger [2000]. A considerable part of the CDA research is dedicated to the ways of creating legitimacy (one of the classic papers on the topic was written by Leuwen and Wodak [1999]), captured by researchers as legitimacy strategies. That way they present the mobilisation of discursive resources suitable for creating legitimate and illegitimate statuses [Vaara and Tienari, 2008]. For the purposes of this research, it is also exciting that the CDA experiments and research activities are known from the topic of biotechnology, and were actually described in a special issue of the Discourse Studies journal (see e.g. the articles by Henderson et al. [2007], and Leitsch and Davenport [2007], Motion and Doolin [2007].

This research relies on the considerations of the Discourse-Historical Approach (DHA) from the CDA trends. This stream, marked primarily by the name of Ruth Wodak, focuses on the interaction of language use and context, more specifically the institutional setting. This methodology is characterised by intertextuality and interdiscursivity. It stresses that texts should be interpreted in their interaction with other texts, various genres, topics and discourses and not on their own and, in addition, texts are formed by interacting with other discourses [Wodak and Meyer, 2009].

The grounded theory methodology [Glazer and Strauss, 1967] was born as a counterpoint to the logical--deductive approach for, according to Glazer and Strauss, on the one hand, theory-building is fundamentally made impossible by hypothesis-based theory testing and, on the other hand, attempts to grasp social processes in variables are insensitive to real processes [Eriksson and Kovalainen, 2008]. The authors of that methodology envisage theory-building as a process emerging from empirics, and since they are not in complete unison even in that regard, the GT broke into strands adopting different approaches in the past decades. These strands propose more or less formalised algorithms based on coding, category formation, and the establishment of iterative relations between the theory and data, stressing that theory-building is not only an inductive process, but it also involves deduction and occasionally verification. (That latter aspect, by the way, became the breaking point in Glazer's and Strauss' approach, as the latter accepts, but the former excludes it.) Constant comparison has a fundamental role in the GT methodology. As a first step of the classification of data, open coding is recommended in the literature, and then once all events, processes and incidents have been coded and categorised, axial coding follows in order to achieve a higher degree of abstraction and identify non-apparent relations. As a third step (selective coding), the research components can be integrated into a greater theoretical system (see e.g. Borgatti [2010], Charmaz [2003], Strauss and Corbin [1998], Glazer and Strauss [1994])

As for the relationship of CDA and GT, they allocate a similar place to data collection/generation in general research. Whatever must be completed prior to the start of the analysis is not a separate fixedly delimited component of the research process. The establishment of the relationship between data and the concept, and their categorisation followed by the collection of new data, i.e. theoretical sampling [Wodak and Meyer, 2009], are acceptable and applicable actions in both methodologies. However, there is a significant difference, on the other hand, in that CDA leads to linguistics as it is based on linguistic categories, while GT keeps away from it. At the same time, CDA also takes into account the content / thematic components [Wodak and Meyer, 2009]. Their interconnection also means that, of the GT stands, I apply the GT approach that does not start with *tabula rasa*, but permits and supports theories, prior assumptions and the knowledge of the context.

In my research I transpose the joint inspiring presence of the two methods by using the CDA DHA analytical steps for multi-step coding, in line with GT, to identify the patterns, central and outstanding topics of the text, by paying attention and identifying also their intertextual and interdiscursive relations. The research was conducted abductively, in permanent motion to and fro between the theory and the empirical data. The steps followed the phases proposed for DHA [Reisigl and Wodak, 2009]:

(1) Prior theoretical and empirical preparation to learn about research carried out in the area, (2) followed by the systematic collection of data and of information about the context. (3) Data preparation (selection of data forming the subject matter of the analysis, transcript preparation, etc.) followed by the primary review of the relevant theoretical and empirical literature and the data, (4) and specification of research questions, as well as formulation of assumptions on that basis. The ideal process contains also (5) a qualitative pilot analysis, which in this research corresponds primarily to the methodology experiments of the focus group transcripts. The next steps is (6), the detailed case studies, i.e. the processing mainly of the qualitative data and (7) interpretation of critique. The iterative and recursive process ends with the (8) application of detailed analytical results or a proposal for it [Reisigl and Wodak, 2009:96]. DHA is integrated into the critical concept of discourse analysis in three aspects:

- text- or discourse-immanent critique, which is aimed at identifying internal structures, inconsistencies, self-contradictions, paradoxes and dilemmas;
- socio-diagnostic critique, which is trying de-mystify, deprive of power, the manifest
 or latent convincing or manipulative features of discursive practices with the help of
 the knowledge of the context, social theories and other theoretical models;
- prospective critique, which aims at improving communications (language use) [Reislig and Wodak, 2009:88].

In summary, in line with the research topic and questions, qualitative methods are used in the empirical research. All that is the totality of various data collection research techniques, certain methodological experiments, and a common analytical framework based on the grounded theory and critical discourse analysis.

The framework outlined below has been used for assessing the quality of the research.

Figure 3. Research quality - evaluation criteria



Source: Eriksson-Kovalainen [2008], Flick [2007], Silverman [1993]

The classic evaluation criteria of the positivist approach to social sciences are summarised on the right-hand side of the figure. The corresponding, yet contrary, criteria are listed on the left-hand side, and are recommended for research based on multiple reality theories and subjectivist information theory, focusing on a relativistic approach and the role of the researcher in creating a meaning. My research is embedded into the constructivist / interpretative paradigm and, based on the applied methodology, it requires the application of four guidelines falling within the category of trustworthiness. In other words, from the research process it requires:

- the credibility of design and implementation instead of its validity;
- detailed presentation and documentation of the process for dependability;
- the integration and confirmability of data and conclusions,
- and the transferability of results, e.g., relationship with other research instead of generalisability [Eriksson and Kovalainen, 2008].

In addition, in the case of CDA, research completeness and accessibility are proposed as evaluation criteria. Of the considerations concerning CDA, the first indicates that by analysing new data the results would not be modified, while the latter refers to the accessibility of the results by the stakeholders [Wodak and Meyer, 2009].

Apart from the contents of this research methodology chapter, the valuation criteria can be captured in the subsequent chapters through my attempts to reflect the various research practices in the respective chapters. My paper describes in detail especially the considerations applicable to focus groups, which I stressed that much in this paper because I used this method for the first time in this research.

Data and researchers were triangulated for the purposes of triangulation (for more details on triangulation, see Flick [2007]. The former was implemented through the three data collection and generation methods of the research, while the latter was achieved through the involvement of co-researchers in data collection and analysis (interviews, interview summaries, structured discussion of interview experiences, observation and discussion of focus group discussions).

The checklist of the GT process developed by Strauss and Corbin [1998] and the summary of the traps to be avoided in the course of discourse analysis, prepared by Antaki et al. [2003], are also interesting in terms of evaluation and quality; in addition, an article by Barbour [2001] should also be noted, as it describes the methodological rigor of the processing of the focus groups.

4.3. Research process

Empirical research focuses on the main actors of the organisational field through qualitative methods. In the course of preparing the research, we reviewed the Hungarian economic press and the agricultural periodicals to identify the topics of agricultural biotechnology discussed in the Hungarian technical literature and by the general public. The results were used as inputs for the *interviews* conducted with the members of the organisational field, and for structuring the *focus group discussions*. Publicly accessible publications were processed and Hungarian public fora were observed in order to learn more about the members of the organisation. The possibility of and need for the analysis of the *researchers' media disputes* crystallised on the basis of the above.

Consequently, in the research preparation phase the agricultural journals covering the topic in Hungary were reviewed. Of all the periodicals published in Hungary in relation to agriculture, rural development, the food industry, and agrarian environmental protection published during our research (23), in the end four (Food Industry, Practical Agroforum, Hungarian Agriculture, Plant Protection Advice) were selected based on the topics covered and the genres applied in the periodicals. In terms of contents, preference was given to topics dedicated to sowing seeds and plant protection, because the transgenic version of the former and the products of the latter used for genetically modified useful plants fitted in the agricultural biotechnology objective of the research. In terms of genres, we were looking for periodicals with diversified contents, but in our search we tried to make sure that longer analytical articles should definitely be contained in the selected periodicals. We made attempts to review fully the periodicals referred to above, from which Hungarian Agriculture was an exception. Its nearly 70 years of history is a superfluously long period in terms of agricultural biotechnology and, therefore, the last 35 years were reviewed, i.e. the starting point of the research was adjusted to the appearance of the first transgenic useful plant.

The Hungarian press was also used as the input for preparations. We focused on the written press and in particular the economic media, while our exploratory research also covered daily papers dedicated to politics and public life. In total, we reviewed the internet archive of the economic periodicals published daily (Napi Gazdaság [Daily Economy], Világgazdaság [World Economy], Népszabadság [People's Freedom], Magyar Nemzet [Hungarian Nation]) or weekly (Figyelő, HVG) and the main electronic portals of electronic media (index.hu, origo.hu) to identify actors and topics. Our snowball-type internet search yielded also other press products dedicated to the same topic (Heti Válasz [Weekly Response], Piac és Profit [Market and Profit]), in the archives of which a systematic search was also conducted.

Apart from media research, the search for written impressions also included the collection of documents of identified organisational field members. That activity





Source: Edited by the author

involved the collection and review of corporate and organisational websites, newsletters, scientific and public life articles.

Observation of public discussions held for various purposes in different genres was also aimed at the detailed description of the Hungarian organisational field. We listened primarily in Budapest but on some occasions also in other towns of the country to scientific conferences, educational presentations, discussion fora, meetings of parliamentary committees, press conferences; these were the most important genres of the presentations organised by the various members of the organisational field.

All those constituted the basis for designing the research plan, i.e. primarily for selecting the actors to be approached, and the input for structuring the questions to be asked during the interviews. The processing of the Hungarian technical literature analysing agricultural biotechnology and the related international empirical research was used as the starting point for the latter. (The processing of that input is described in the subsequent parts of this methodology chapter and in the empirical analysis.) On the basis of all those, a three-pillar research plan was designed, the tools of which are summarised in Figure 4.

Fundamentally active actors have been directly approached and qualitative interviews were conducted. However, a different approach was (also) used for two specific groups of stakeholders: researchers and consumers.

Qualitative interviews. Semi-structured and structured interviews were conducted with the main actors of the Hungarian agro-biotechnological organisational field.

The qualitative interview is a flexible method which may be used almost anywhere and can produce data of great depth, says King [1994:14] who, in agreement with Kvale [1996] describes the interviewee as a "participant" who takes an active part in shaping the interview. Besides the recommendations of King [1994] and Kvale [1996], I focused on the guidelines of Solt [1998], Gaskell [2000], Fontana and Frey [2003] and Heltai and Tarjányi [2005], respectively, in preparing and conducting the interviews.

We made a total of 43 interviews with decision-makers of the domestic administration, authorities, seed producer companies, natural and social science researchers, NGOs, consultants and journalists, i.e. actors with a potential influence on the legitimation of this field, based on a review of the Hungarian economic and agricultural press and the exploration of the institutional system, and we have also used the snowball method.

The semi-structured interviews were based on guidelines developed by iteration through the collation of theoretical and empirical information, which were therefore different depending on their specific place in the research process and the stakeholder group concerned. We wanted to make audio recordings of the interviews; two interviewees refused to consent to that: in their case, we took notes and complemented the text made a transcription right after the interview. A summary modelled on a uniform structure (see the Annex) was written of each interview within the shortest possible time after it (as a general rule, within 24 hours); this gave an opportunity to reflect right away on the interviewee, the interview situation, the content, the guideline and the interviewer, and provided an input for discussions with fellow researchers and for the development of the guidelines. It has also provided the basis for the selection of the interviews of which full, literal, transcriptions were made.

Stakeholder group	Number of interviews
Company	8
Corporate consultant	4
Researcher	8
Social science researcher	2
Regulatory authority	8
Organisations of agricultural producers	4
NGOs	6
Media	3
Total	43

Table 6 Number of interviews by stakeholder group

Source: Author's compilation

The shortest interview lasted for 35 minutes, the longest for 160; the overwhelming majority was in the range of 75-90 minutes. Apart from verbal communication, the interviewees were asked to make drawings, i.e. to provide a visual representation of the GMO force field, during the interview. This experiment was a fiasco, as only a few interviewees agreed to do that. The experience was that the request surprised the interviewees and interrupted the conversations, so it was soon cancelled from the guidelines.

Researchers' disputes in the media. Of the rich collection of documents and written sources, the disputes of researchers and scientists engaged in biotechnology published in the written press were also studied separately. The role of researchers, primarily those operating in natural sciences, i.e. (micro-) biologists, geneticists, botanists and soil scientists, etc. is very special in biotechnology. The level of biotechnological research, generally only slightly different from basic research; the considerable presence of researchers in companies and in business; the permanent, mutual and strong relationship between industry and science companies and research workshops, and the primary analysis of media presence in Hungary suggest a clear trend

whereby the researchers concerned are included among the actors who make public statements the most often and who express their opinions frequently also in front of the wider public. Researchers' disputes about agricultural biotechnology were covered regularly in the Hungarian press products for approximately ten years, starting in 1999. In total, approximately one-and-a-half dozen major series can be identified, in which practically permanent (main) actors argued with each other, whose disputes were from time to time supplemented by statements of actors of particular natural science disciplines. The 6 research disputes analysed in this paper are characterised by a kind of iteration, i.e. they form a series on the basis of the responses given to each other's papers. (The other criteria of selection are described later.) Consequently, that pillar of my research focused on researchers' disputes that took the form of an exchange of articles where participants, who were almost exclusively members of the natural scientific community, made their contributions in responses and reactions.

Although interviews were also conducted with a large number of the main actors of the analysed articles referred to above, as they were the main stakeholders of the Hungarian agro-biotechnological organisation field, the analysis of the researchers' disputes was still considered an important and a necessary component. Researchers making statements about the topic have an important role as the most frequently appearing actors of the organisational field and hence the shapers of public discourse. In addition, the dispute process created by the responses reflected the exchange of opinions and the dynamism of the researchers and, therefore, the media dispute was to some extent comparable, from a distance, to the focus group processes, even though there the reactions of actors towards each other are more spontaneous, and the process is more controlled by the moderator. It also needs to be noted that no other stakeholder community created any similar scope of interpretation, formed jointly by the parties, at least not in a public written form, and, therefore, the mere existence of the media disputes is quite interesting.

Focus group discussions. Twice two(in sum four) focus groups were organised to assess the sources and actors making statements about agricultural biotechnology that/who shaped consumers' GMO knowledge, information and opinion. The focus groups were not designed for market research purposes, but as an instrument of social sciences. As a basis, empirical researches aimed at international and Hungarian consumers, including those applying the focus group methodology, were identified and reviewed both in terms of methodology and contents.

"Focus groups are a form of group interview that capitalise on communication between research participants in order to generate data." [Kitzinger, 1995:299]. They call it both focus group interview and discussion; the specific name chosen in a particular situation also reflects the choice of approach to processes followed with the group. The latter builds on the potential of mutual influences among members, generation of opinions, common thinking, in line with Kitzinger's definition quoted above. Meanwhile, for those looking at focus groups primarily as an interview, group dynamics is a source of distorting the opinions of participants. True, the countless processes described by social and organisational psychology concerning collective influences could really come as a disadvantage of the group situation. Conversation analytics warns of the problem of e.g. 'neighbouring pairs' whereby participants have a tendency to tune in to the opinion of the person speaking before them [Vicsek, 2007]. At the same time, the desire of conformity may not only emerge in participants sitting close to each other, but also in subjects organised in cliques along some theme / source of opinion. Normative and/or information-based influence, suppressing, silencing or keeping silent about the opinion that counts as minority or exceptional, social loafing, and group polarisation are all instances of social influence that could emerge even in a focus group discussion (for a summary of the above in the situation of researchers and/or decision makers see e.g. van Avermaet [1995], Gáspár and Matolay [2010], Vicsek [2007], Zoltayné [2005]).

The present study – mindful of the above aspects – wishes to capture also the process of forming opinions. A factor in choosing the method was that it is appropriate for uncovering the knowledge and experience of individuals, and – as Kitzinger says [1995] – it reveals not only the content ('what' participants think) but also 'how' they think, and 'why' they think the way they do. This can bring to the surface opinions and opinion-forming that would not emerge in a one-to-one interview, because debates, persuading others, teasing, joking, etc. are less likely to occur in an interview. In a focus group discussion, in a situation 'smelling less of research' than other survey types, participants are exposed to other, more 'everyday' impulses. And that also means that views impossible to elicit through direct questions – because experiences and attitudes do not usually float on our minds' surface packaged with supporting arguments – may suddenly surface in the middle of a conversation, and participants may clarify them together (through questions, disagreements, etc.) [Kitzinger, 1995].

In addition to the group arrangement and other difficulties / risks, the literature lists advantages at great length (e.g. Eriksson and Kovalainen [2008], Síklaki [2006], Vicsek [2007]). I will underline the following features at this point:

- The focus group upgrades participants to expert status, and this has an empowering effect [Eriksson and Kovalainen, 2008]; besides the relatively loose conversational form of questioning, this is reinforced also by the fact that they work together with the researcher (moderator). Of course, that undoubtedly attractive feature cannot work with as much power and as completely as it may happen with participation techniques.
- It may ensure time to ponder on questions and thoughts expressed, and besides spontaneous utterances, there is time to deliberate, which may give rise to new opinions and aspects not otherwise expressed [Eriksson and Kovalainen, 2008].
- The focus group may trigger a change [Barbour and Kitzinger, 1999], and it may
 mobilise and activate. With the present research for at least part of the consumers
 such activation may mostly take the form of further familiarisation with the
 subject, at least participants expressed their need for that. We wished to promote
 that by handing out a written information package.

Consumer testing is justified by the fact that, although the products of agribiotechnological companies are purchased and used by farmers and agricultural producers in the supply chain and not by them, the ultimate consumers of the most disputed portion of the genetically modified useful plants (products integrated into food production) are food customers. The attitude of those consumers is extremely important in the legitimacy of the industry, of such companies and of the products, which is supported not only by a large number of the respective research activities, but also by the members of the biotechnological organisational field.

Two different groups were organised on each of the two occasions, which differed by educational attainment level (secondary and higher qualifications). The reason why we selected this method for channelling the opinions of consumers, also important actors of the organisational field, into the research was that, apart from the attitude, knowledge and the quality of arguments, the social processes were also interesting: our intention was to study also the interaction of participants and the dynamism of their mutual learning and arguing process. As I had not used that methodology prior to the Ph.D. research, the methodology itself and the experiences of the process are covered in this paper more extensively than the methodology of the other pillars.

I completed a manual analysis, primarily because during the first steps, in 2006, electronic and computer-based methods were not yet accessible, especially not for Hungarian texts, and in the end I decided to keep up the process. Below I shall describe the dilemmas and decision-making situations that occurred during the focus group analyses. Almost all authors begin methodology papers analysing focus groups with a misleading statement that literature is "shortest" of the presentation of focus group analyses. Stress is put on preparations, organisation and implementation, and attention is focused primarily on transcripts and notes from the follow-up work of the discussions, yet the method of processing and analysis are not discussed in detail or extensively at all. Naturally, we are not left without any analytical method, but contrary to the analytical approaches, in my opinion the literature describing in detail the process of focus group discussions was dominated primarily by the following inter-related factors.

- Data collection procedure and/or research method. As Eriksson and Kovalainen note [2008], a focus group discussion can be interpreted as both a data collection procedure and an individual research method. In the course of a focus group discussion, not only the set data – the texts -- are recorded, as the responses are also registered in relation to a questionnaire-based interview. With regard to the analysis of a focus group, when the focus group is used as a method, not only the direct content elements, but also other factors (e.g., characteristics of the dialogue situation, meta-communication, silence, unexpressed contents, language, etc.) are also important parts of the analysis. It is not the only technique that may be considered a dual method in that respect, because similar things can also be stated about interviews, but the duality of utilisation or application or, if you like, uncertainty, is also reflected in the research. Chapter xxx. describes GMOrelated consumer research, with special regard to analyses based on focus group discussions. During the processing of those discussions, one of the challenges was that although the authors mentioned the use of focus groups, they usually did not indicate whether they interpreted it as data collection or used it as a research method. Apart from the fact that the methodological explanation is *ab ovo* missing, I can see the importance of that distinction in the interpretation of the results, and that issue leads us to the following point.
- Market research / applied research or social research. Partly due to its history (it was used first as a market research technique in the 1920s) and its characteristic features making suitable for such purposes, this method is a favoured tool, a kind of applied research for the assessment of consumer conduct, consumer perception, attitudes and choice, and for the evaluation and development of products / services, advertisements, etc. The presentation of the results of focus groups organised for market research purposes and their communication in line with the client's requirements fundamentally refer to an understanding értő good? summary of the essential message of the focus groups. Without diminishing its importance or underestimating the merits and difficulties of that work, it should be noted that in such research the focus in fact is much rather on the composition of an adequate focus group, the establishment of the appropriate lead, and on creativity, required for obtaining the opinions. According to the literature, it is

also an example of processing when the focus group is watched by the client and the moderator summarises the important elements experienced by him and the messages for the client on site, or if they jointly interpret what they have seen [Babocsay, quoted by Vicsek, 2006:259]. Apart from this analysis, which can also be considered a minimum programme, applied research also uses numerous other analytical techniques, described as "fast analytical procedures" by Vicsek [2006] from note-based techniques to more detailed and draft-based procedures, such as e.g., the long table or the large sheet of paper method, to be described later. And even if the example of the "fast summary" provided to the client straight away does not carry the option of deeper interpretation, market research does not lack that either, nor reflection. (As an example of the latter, see Síklaki's analysis of a primary feedback on an advertisement and its more complex interpretation [Síklaki, 2004].) For the practical differences between the two methods of application (standardised techniques applied to financing, organisation, moderator, the transcript or group discussion, etc.), see for example the article by Vicsek [2006] who covers their different scientific philosophical background (positivist market research, different research philosophical approaches in social research). They may be based on different theoretical and epistemological lines which, in terms of analysis, relates to the following.

- Qualitative research. Kitzinger [1995], Barbour [2007], Ericsson and Kovalainen [2008] and most authors interpret focus group discussions as a qualitative research methodology. According to Letenyei [2005] if a focus group is covered badly in scientific research, that is exactly because of its forced quantification. The primary hindrances to a quantitative analysis are the low number of elements and statistically non-representative samples, and that, due to the relative freedom of asking the questions, the responses may be affected by several factors. However, there are attempts at quantitative content analysis and statistical processing (e.g., Hagemann and Scholderer [2009]) also in GMO consumer research. The results can be expressed in figures or in some other form ("fewer, "more", "majority"), but these are only supplementary components; they cannot represent the main thread of the analysis or interpretation. Letenyei [2005] also stresses that quantification is an erroneous approach, because for a focus group "often the process of development and not the distribution of responses" is the key issue for the research [p. 103]. The relevant relationship between a focus group study and quantification can be captured in the combination of the two: primarily in market research, but in certain social research also a focus group study is followed by a questionnaire survey and its statistical analysis. The choice of the focus group methodology in social sciences is generally based on a qualitative approach. According to the literature, the detailed transcripts of the discussions can be analysed with a long series of qualitative methodologies. Obviously, the methodology to be applied must be in line with the research objective and the research strategy. In that logic, the analytical method does not (necessarily) have to be included in the literature of the focus group discussions, but in the literature listing the long list of qualitative methodologies from (critical) discourse analysis through argumentation analysis and grounded theory to qualitative content analysis, by taking into account numerous procedures.
- *Group situation.* In addition to the above, interaction among group members is a speciality of focus group discussions. That feature is covered again in a short paragraph, because the analysis of group dynamism introduces a separate factor into the qualitative analysis. Although it is covered only by a fragment of the already limited focus group analysis literature, certain authors (see Kitzinger [1994], Vicsek [2006]) pay specific attention to it.

The transcripts were analysed manually, which was a time-consuming and, to a certain extent, tool-demanding task itself. In addition, I must admit that I grasped the opportunity of experimenting with analyses, and some steps and some time could definitely have been spared. Table 7. reviews the techniques used and the focus of my

analysis through the used techniques - this is what was labelled as content review in the table.

Table 7 Overview of the focus group analysis

Technical steps	Content assessment		
Matrix overview of the main topics and	Based on emergent topics.		
characteristics of the four focus group	Based on legitimacy strategies.		
discussions. ⁵⁰	Based on 5 fundamental GMO		
Coding of topics and conditions with	arguments.		
codes, developed emergently or defined	Based on disputed, consensus and		
in advance.	idiosyncratic opinions. Based on the		
Notes, summary, brainstorming,	myths concerning consumers.		
interpretation, etc.	In comparison to national and		
Long table method for the horizontal	international research results and focus		
analysis. ⁵¹	groups.		

Source: Edited by the author

⁵⁰ With regard to several focus groups organised within the same research, Knodel recommends preparing an overview grid prior to the analysis [1993], to "get to know" about the focus group discussion in a structured manner, even if the analyst researcher takes part in the focus group (as an observer or moderator). The columns of the overview grid relate to one focus group, its rows contain the (main) topics, either topics arising from the main thread or topics mentioned during the discussion. Each cell contains a short summary of the discussion of the particular topic by the particular group, to be supplemented by further characteristics. Such may include, according to the author's proposal, the direction of the group's opinion, or the degree of agreement on the particular topic, the quality of the opinions or information, or the influence on each other of the moderator and group members [Knodel, 1993]. All those factors may contribute to the interpretation of the discussion. In summary, the matrix provides a review of the focus groups by providing a common framework for their content and giving place to the first reflections and impressions of the researcher. It was a useful tool in the preparation and application of subsequent analysis and, first of all in my research, in the course of horizontal analyses, i.e. the analyses of the topics.

⁵¹ The so-called long table method [Krueger, 1998] or the large-sheet-of-paper approach) [Vicsek, 2006] are helpful primarily for horizontal analysis. That technique was named based on the space required for it, because it practically means cutting up the printed transcripts by paragraph and reclassification by topic, a kind of manual *cut-and-paste*, followed by an analysis. Due to the latter, the space requirement has a term: the puzzles of the re-edited discussion move or stay on the table during the analysis or writing (or on the floor or on the wall, but definitely on some large space). When this method is applied, each focus group discussion should be numbered by paragraph, and then printed out on different coloured paper in two copies, by discussion. One copy can be cut up, while the original copy should keep the discussion in its original order [Krueger, 1998].

5. Legitimation tactics and strategies

The following chapters of the thesis present the components and results of my empirical research. I process the relevant international and domestic studies according to the three pillars of my research, presenting the research considerations and the results of my analysis by pillar. Chapter 5 strives to identify the forms of legitimacy and the strategies for creating it based on interviews with the members of the organisational field. Chapter 6 presents the argumentation strategies and central narratives taking shape in the researchers' media debates and links them to the legitimacy typology outlined in Chapter 2. Chapter 7 provides an introduction to consumer research. Chapter 8 focusses on the summary conclusions offered by the three research pillars in the wake of the foregoing, and on answering the research questions.

To my best knowledge, approximately a dozen researches were conducted in the past somewhat more than a decade in the social sciences field which are akin to one of the three empirical research pillars of my thesis, i.e. studies focussing on stakeholder identification, on a stakeholder group, on certain components of the organisational field or on the institutional system. The following table provides an overview of domestic agri-biotechnological research approaching its topics from the social sciences side. Consequently, it does not aim at reviewing the natural sciences studies, nor does it comprise the analyses on the relevant regulations, as the investigation of the legislative framework is not the subject matter of the present research.

Research direction	Source	
Identification of stakeholders and	Murányi és Berényi [2004];	
argument systems	Sükösd, Fonyó és Kollár [2008];	
argument systems	Kasza és Lakner [2012]	
Inquiry into consumer attitudes	Bánáti és Lakner [2003];	
inquiry into consumer attitudes	Kasza [2009]	
Media analysis	Kasza és Lakner [2012];	
	Vicsek [2012]	
Identification/preparation of the	Forman and Haidy of Vári [2005].	
institutional systems of risk assessment	Tombéoz [2002]	
and management and of communication		
	AKI [2005]; Bánáti, Szabó és	
Economics analysis	Lakner [2007]; Popp és Potori	
Economics analysis	[2007]; Pataki és Matolay	
	[2008]; Schulz [2012]	

Table 8: Domestic social sciences research pertaining to agri-biotechnology

Source: Edited by the author

As a matter of fact, relatively many studies have been made in that category, and I did not even indicate classical market researches if only because those will be covered in detail in Chapter 7. So the table refers to less consumer-related sources than possible, but nevertheless to more researches than the anticipated half a dozen since some of the research directions listed here relate to my Ph.D research tangentially only. I do not want to establish any closer links with the researches which prepared and investigated the institutional system of risk assessment and management and of communication albeit I could take part in the exploratory research conducted for the analysis of Ferencz, Hajdu and Vári [2005]. And neither do I establish explicit links with the ones I referred to above as studies in economics research. The latter is the collective name for economics analyses on the economic effects of the spread of GM plants [AKI, 2005], and on the economics aspects of their production and industrial utilisation [Popp and Potori, 2007]. The overview summarising the transformation of the food supply chain due to the appearance of GM plants and the possible impacts of the latter on the components of the former on the basis of the relevant international and domestic literature belongs to the same category [Pataki and Matolay, 2008]. It is worth mentioning, moreover, the research of Bánáti et al. [2007] querying the opinions of agricultural producers and members of the food supply chain on GM products and their regulation. (Note that, apart from that, we can only speak of corporate market research among agricultural producers: Monsanto commissioned a market research covering the largest domestic farms [Czepó, 2005].) Finally the analysis of the clustering processes of biotech companies in the Szeged region is mentioned here [Schulz, 2012].

That is, the first lines of the table are the ones that relate more directly to the present research. They approach the issue from the side of one or several stakeholder group(s), and will be discussed later in this and the following two chapters.

5.1. Characteristics of the organizational field

All the multi-national agro-biotechnology companies listed in Chapter 3 have subsidiaries in Hungary. Besides Bayer CropScience, Dow Chemicals, DuPont, Monsanto and Syngenta, it is important to mention the name of Pioneer Hi-Bred indicated as seed company of DuPont in Figure 5 showing the acquisitions and mergers. True, Pioneer Hi-Bred is partially owned by DuPont, but in Hungary they are present as separate entities, DuPont in the field of the manufacture of plant protection products and Pioneer Hi-bred in seed manufacture and distribution. The name of KWS also occurs in the context of large companies concerned by agro-biotechnology and present in Hungary, since this seed producer, the subsidiary of a German parent company, is also member of Barabás Zoltán Biotechnology Association (BZBE), the joint organisation of biotechnology researchers and companies.⁵²

Table 6 in the chapter on empirical research quantifies the interviews made with members of the organisational field in a breakdown by main stakeholder groups involved in the legitimation process. Let me note here that no interview was made with actors of political parties (the Parliamentary parties gave their unanimous support to the ban on GM seeds, which makes this an exceptional and unique issue in the range of Hungarian Parliamentary decisions), nor with stakeholders participating exclusively in "invisible" events of the legitimation process taking place with the exclusion of the public and/or the other stakeholder groups, so to say. Although the list contains some actors having lobbying tasks, given their nature, the underlying processes can hardly be researched directly, although information on e.g. the Hungarian operation of the GMO outreach and conflict management programme of the United States can be obtained from what the stakeholders say and via the wikileaks documents.

In the rest of this chapter I will first provide a summary of the main features of the organisational field, comparing the results of this research with those of earlier Hungarian studies. Then I will analyse the legitimation activity of agro-biotechnology companies, presenting in the thesis the activity of other stakeholder groups through that.

⁵² BZBE's members are institutions and individuals. The institutional members of the association founded in 1999 include 12 university and HAS research institutes and 8 corporate institutions, and its individual members are 8 researchers and 12 company leaders and GMO specialists. Its goal is "to present the research and application options provided by genetic engineering, and to promote their utilisation in Hungary"... "through the active contribution of the staff member of the university and HAS research sites". [Zöldbiotech.hu, s.a.].

Gyula Kasza and Zoltán Lakner [2012] have performed a qualitative discourse analysis of articles released between June 2000 and November 2008. Examining three dailies (Magyar Hírlap, Magyar Nemzet, Népszabadság), the weekly Élet és Irodalom (Life and Literature), Magyar Tudomány (Hungarian Science) and electronic sources (index.hu, origo.hu, forumkerso.hu), they identified 289 articles on agricultural biotechnology, which they sorted into pro-GMO and anti-GMO categories (with 181 and 108 articles in the respective categories). In addition – and this was their primary research objective - they identified the interviewees, i.e. examined who were the influential opinion leaders through whom plant biotechnology was presented to media consumers. In terms of contents, the authors have concluded that the opinion-leading groups that were identified basically held the same position and used the same arguments in domestic press within the given group, be they regulators, companies, environmental and consumer protection organisations or farmers. An exception to this is the group of scientific researchers who, according to the authors, are sharply divided into pro-GMO and anti-GMO researchers based on their appearance in the press. Regardless of the media analysis, the authors now also provide an estimate: In their opinion, in Hungary three quarters of the researchers concerned show a pro-GMO stance. But they add that behind this declared position there may also be a social psychological process of avoiding being seen in a conservative isolationist light.

The present research – similarly to other local researches – confirms that several attitudes, contrary opinions are expressed in the groups of science researchers studying GMO (the relevant argumentation strategies are investigated in the following Chapter 6). On the other hand, it disputes the uniformity of the other stakeholder groups as formulated by Kasza and Lakner [2012]. Even if we disregard that several actors identify themselves as being neutral (see below), a difference in attitude is discernible even within specific groups of the organisational field. One example is that of bio-producers and traditional seed producers, whose argumentation as well as attitudes are obviously not identical, even though most recently the standpoint of the latter has come quite close to that of the former. The clear anti-GM stance of those concerned by biofarming relies on environmental-ecological criteria and also on the consideration that the difference between the products, i.e. the distinctive qualities of bio and non-bio products, will disappear if GM plants threatening with cross-fertilisation are sown near the biological farms. Although this latter is also an economic argument, its message is quite far away from what a leader of an association of agricultural basic material
producers expressed as "Economic interest is absolutely binding". He not only relegated into the background all other considerations – and also any other type of legitimation, but the pragmatic one –, but also revealed that, in the final analysis, the association had no clear-cut standpoint regarding GMOs. The bio-farmers' representative explained that permissively during the codification of the Coexistence Decree by saying that traditional seed producers had had hardly any opportunity to come across and to collect experience on biotechnology and its produce, and to weight its effects relative to their own activity. However, the association of bio-farmers had already imposed a total ban on GMO, without any tolerance, on Hungarian bio-farmers in 1997, prior to the GMO Act of 1998 and the European regulations of 1999 clarifying the relationship of GMOs and ecological farming. Note, however, that one of the main drivers of the differences between agricultural basic material producers appears to be the market requirements of the given field. Grain dealers feel more and fodder producers less the pressure/demand for GMO-free products on behalf of their business partners. Neither is the Hungarian plant breeder community unanimous in regard of the GMO issue: there are two kinds of approaches, attributable basically to a difference in interpretation - shown in more detail in the section on the researchers' debates -, i.e. whether genetic engineering is but another new chapter in the history of traditional breeding, or it represents a substantially different technological, logical, direction throwing plant-breeding to the dogs.

Similarly, neither are the Hungarian ministries unified. The GMO issue was treated in most of the period under study by four ministries concerned, the ministries of agriculture, environment, health care and economy, respectively⁵³. The first two took an active part in establishing the Hungarian legislation and institutional system, and in initiating local inspections, whereas the measures to be discussed in the EU, for example, were prepared by an inter-departmental committee. The different attitudes to GMO in the period under scrutiny can be summarised as follows. The environmental department said a clear "no", quoting as its main argument the necessity of biogeographic studies on the Pannon Biogeographic Region. Officially, the agrarian department shared the "no GMO" position, but their interviews and public utterances suggested a more differentiated stance. What was discernible in the first place was that they considered exemption from GMOs the pledge of the competitiveness there was some doubt whether the relevant advantages of GMO-free products would prevail, or whether

⁵³ The ministries are indicated by their activity concerning our topic instead of their actual names ever.

the drawbacks (backlog in genetic engineering, improvement of the position of countries producing also GMO) would move into the foreground. As a matter of fact, the dilemma was whether, in terms of Porter's generic competitive strategies, it would be more expedient to adopt a differentiating strategy developed through the ban on GMOs, or one driven by cost leadership, through the introduction of GMOs promising cost reduction. (For the generic competitive strategies, see Porter [1993], Chikán [2008]). As for the ministry of economy, the issue was again subject to some fluctuations, albeit in a different way. Apart from a specific period, they let the other two departments mentioned before take the lead, but mainly in 2005, the argumentation was dominated by the potential economic advantages promised by the bio-technology industry and plant bio-technology, which triggered a pro-GMO position in contemporary legislation.⁵⁴

Consequently, one could hardly assume that the GMO-related attitude of the stakeholder groups was homogenous, at least not in certain periods. This thesis cannot cover the further analysis of these deviations in regard of the stakeholders quoted here, but it will pay heed to the details which stem from them in regard of the activity and argumentations of the companies.

Similarly to the research of Kasza and Lakner [2012], Murányi and Berényi [2004] also identified two opposing groups, that of the supporters and the opponents. Indeed, it is difficult to disregard this dichotomous category-making, for the opinions expressed by the actors always have a certain, positive or negative, overtone. The interviewees sort of pick on the actors, typically researchers, who try to formulate their opinion or show their finding without its being convertible to the categories of support or opposition, considering it a sure sign of the weakness of their personality, i.e. extreme conflict avoidance or cowardice. Indulging in personalities is a constant feature of the Hungarian GMO discourse, but in the present line of thought the emphasis lies elsewhere, namely whether those concerned might adopt any other position in the GMO ring than the pro and con corners.

⁵⁴ Several governmental and corporate interviewees refer to the impetus of the minister of economy at that time in regard of the exploration of new market/economic options, which coincided with the activity of the US GMO lobby. On the occasion of the minister's visit to the United States, US funds for innovation, for biotechnology development appeared on the horizon, on condition of lifting the moratorium on production and import in Hungary by a short deadline, which finally did not take place. The minister of economy negotiated with several American biotech companies, which the Hungarian press deemed "actionable" on several occasions (see e.g. Bohus [2006]), or reported on by focusing on the exertion of pressure (the minister cannot make a presentation at an American biotech conference unless he takes a stand against the moratorium).

Apparently, yes, to the extent of sketching their own identity, but with difficulty beyond that. Corporate, researcher, civilian and authority interviewees all found it important to position themselves in the GMO force field, namely by distinguishing their respective positions/opinions from the pro and con extremes, suggesting first of all their intention to demonstrate their professionalism and sovereignty. A researcher in the anti-GMO camp, for example, did so by criticising plants within the scope of the moratorium on genetically modified plants, and not biotechnology in general. The competent representative of the company working with both GMO and traditional seeds and with plant protection products stressed that the fact that the environmentalists made their vice heard did not mean that those who did not agree with them would destroy the environment. (As a follow-up to his argument, he emphasised that according to a biotech company thinking in the long term, biotechnology might be a good response to the current environmental challenges according to the current state of the art, so he would not take the opposite side. As we shall see in the following chapter, this is also the strategy of detachment. However, expressions of a neutral position and the intention of squaring/reconciling the opposing sides are outnumbered by far by the occurrences of assignment to two opposing camps and the related adversary/warfare metaphors. In the overwhelming majority of interviews and for all stakeholder groups without exception this is a real "war", a "battle" waged by opposed parties where the "battlefield" is created by the "declaration of war" of one or another actor; where part of the actors desires to achieve results in the background by adopting an "aggressive attitude", and where the "scientist becomes the frontman who can be pushed forward in the communication battle". A "stationary war" in which the "front lines have become solid" and it is impossible to exit the "trenches unharmed". The war metaphor suggests once again that there are two opposing camps. Note, however, that Sükösd et al. [2008] identified five different discourses among actors having a potential effect on domestic GMO policy-making which, if arranged on a scale, would lead one from the fundamentalist pro-GMO position to the agricultural-interest-centred anti-GMO discourse. The experience of the present research supports the findings of Sükösd et al. [2008]; of the discourses identified by them I will show in more detail the ones pertaining to companies.

Another important feature of the organisational field is that the most active part of the stakeholder groups, hence the ministry for environment, the companies, biofarmers, researchers and civilians are characterised by emblematic figures. The last two line up the most actors personifying their arguments. Since the active and visible part of the organisational field responsible for legitimation is thus embodied by certain persons, the knowledge, competency and personal integrity of these persons has special relevance. Some actors actually reflect on this by making explicit reference to the relationship between GMO and their personal features (e.g. "this requires commitment and toughness"), whereas others deem any allusion to personal traits unprofessional ("lack of the capacity of careful consideration"). All these are linked to the personal level of moral legitimacy (see Table 1). The supporter side actually makes direct reference to the necessity of charismatic persons, that is, persons whose knowledge as well as personality may be considered authentic, who can captivate others, by saying that "only professors who are accepted and popular figures familiar with the language of the public" should speak in public about this topic. Disregarding here the intention to limit the freedom of speech, inherent in the sentence, these words reflect an obvious desire to appeal to the communication and interpersonal skills and status-based authority of the person concerned.

The special emphasis assigned to this individual level triggers and amplifies further features of the Hungarian legitimation process. On the one hand, it feeds the already mentioned personal remarks, to be discussed in more detail later. On the other hand, the group of public actors has emerged and stabilised at an early date. More or less the same presenters and speakers are invited to media events, conferences and to public lectures, and if one is left out, that will certainly be remarked (a typical instance was the media debate concerning the genetic engineering round table of "Mindentudás Egyeteme" (University of All Knowledge)). Furthermore, when the trenches are dug and institutionalised, there is a clear tendency observable on behalf of the invited representatives of the other party to stay away from the event in an effort to delegitimise it (e.g. pro-GMO researchers do not go to the session of the GMI Round Table). As a typical example of quasi-permanent participation, I will present the participation of the NGO side at public GMO conferences in Hungary. The same actor⁵⁵ is invited to hold a presentation at such events. Consequently, the environmentalist who has a degree in biology has become an accepted authority – due to his individual and organisational activity and also his GEVB membership, and in acknowledgement of his professional argumentation skills -, but his presence has also become a relatively easy

and predictable way of involving the opposing party to create the image of a balanced debate.

Developments taking place in public as well as others that are hidden both reveal the intent and capacity to influence the legitimation processes. The corporate actors highlight the efficient influencing activity of researchers, bio-farmers and NGOs – by the way, they say the last are the most efficient and the least capable of compromise. Bio-producers are the opposite, as witnessed by the abrupt alteration of proposals accepted in the social debate on the legislation – in their opinion presumably under company pressure ("since all other stakeholders took part in the preceding process"). In summary, each of these two stakeholder groups attributes the activities of real legitimation and de-legitimation, respectively, to the counterparts. In the period under study, a growing number of NGOs joined the anti-GMO side, applying a diversified arsenal, from the already mentioned utterances and the publication of "Génpiszka" (pun: GeneTampering) and other information bulletin series, through GMO briefings organised for journalists on a monthly basis for a certain time, to street demonstrations and the exhortation to join the network of GMO-free settlements etc., but judgements on their influence vary. Apart from the expression "the dark green" used by the companies, the relationship with NGOs is characterised by the corporate quotation "we have already called on Greenpeace in connection with the save-the-frogs issue". The Ministry for Environment, on the other hand, said their activity was too little.

It is an important element of the description of the legitimation process that BZBE, the already mentioned association of companies and researchers, is not the only instance of institutionalisation in the story. According to its founder, the GMO Round Table was established by the side of the Environment and Agriculture Committee of Hungarian Parliament in 2005 not as an anti-biotech organisation, but as an NGO "supporting the domestic, original genetic engineering researches and side effect studies" and "aims at providing unbiased information to decision-makers, to the press and the general public" [GMO-Kerekasztal, s.a.].

All things considered, researchers are the most visible actors of the discourse, and consumers and farmers are the least visible in this field, although their interest representation organisations do take a stand on the issues at stake. In other words, they are the members who are the most concerned and the least involved directly.

5.2. Corporate legitimation processes

The corporate agro-biotechnological legitimation strategies are far from uniform. Despite the consonance or even intertwining of some of their elements such as e.g. BZBE membership, they have substantially different legitimation objectives and activities. Before presenting those, it is important to emphasise again that both the visible and the invisible trends of these activities are significant. The latter, i.e. active legitimation activities implemented behind the scenes and/or via other actors, is one reason why this research targets the level of the organisational instead of the corporate field. Note, moreover, that the companies being covered are entities which have been present and active in Hungary for a longer time – as we shall see, this is given an emphatic role in the system of corporate arguments –, and hence the issue at stake is not the legitimation of the company or the organisation, but that of a new product or technology. At the same time, the risk of the possible loss of established legitimacy – market position, stakeholder acceptance etc. – due to the GMOs, and the intention to minimise any loss of this kind also appear in the legitimation argumentation and activity of certain companies.

Other members of the organisational field also aim at the legitimation of a product or technology, but one cannot disregard the criticism of companies, whether it focuses on the methods and factors applied in these legitimation processes (e.g. tiring tactics of lobbying companies applied against the competent ministry staff) or the operating mechanism, core activity, style or history of the company concerned in the wider sense. Such de-legitimation processes concern mainly companies active in the domestic GMO processes and communication, primarily Monsanto, the company that is put in the crosshairs most frequently also internationally. It is not an objective of this paper to present specific companies, nor their GMO-related foreign research, production, marketing etc. activities, results and scandals. Let me note, however, that although other agro-biotech companies have also been subjected to close attention, frequent attacks and continuous analysis of environmentalist and legal aid organisations, none has ever been analysed in such detail, in so many respects and for so many kinds of audiences as Monsanto, discussed in a series of books and movies because of its pre-GM products, Agent Orange and the hormones stimulating growth, and its economic and political power positions and measures [Charles, 2001; Bakan, 2004; Pringle, 2005; Robin, 2009].

Legitimation actitivites. Two different approaches are discernible in their representation of biotechnology and their identification with it, which can be distinguished first and foremost on the basis of the range of stakeholder groups with which they communicate and their communication channels. These two key features are concurrent with other criteria like the mode of interaction (uni- or bidirectional communication), the representation of the biotechnology issue within the organisation (whether it has a dedicated representative, expert(s) specifically assigned to it at the subsidiary). The two main approaches are the following:

- 1. it does not handle the biotechnology issue independently, but through the channels of the parent company, the industry organisation etc.;
- 2. it applies a diversified communication toolkit for all stakeholders (authorities, farmers) other than the food consumers; active, public participation (in addition to the foregoing: media presence, utterances at public fora).

Group 2 of course also relies on the parent company's international activities, but it also operates locally, both in professional, biotechnological organisations, and on its own. The argument for inter-company cooperation is that as long as the objective is not a specific product, and the underlying market share but the promotion of GMOs in general, such cooperation is welcome. It could be outright advantageous for companies that prefer not to have their names publicly associated with GMO. Thus it can operate in the shelter of a louder and more assertive association or company hoping for favourable developments. Companies choosing to play that role emphasise that GMO for them is not a last resort, not a forced path to follow. They can meet their clients' demand by their traditional products, and they have no major biotechnological investment behind them waiting to bring its financial return that should critically force them to enter the GMO segment. At the same time, however, the question also emerges – though with varying intensity - if their local market, their local relationships, local acceptance - and ultimately their legitimacy – will not suffer if the 'shadow of GMO' is cast over them. Thus at the same time they also try to minimise their expenses and risks in this struggle for legitimacy in which the wait-and-see strategy seems appropriate.

Having stated this, a company clearly standing out among firms actively contributing to influencing legitimacy with its agile approach is Monsanto. However, the activity rate of companies in Hungary is generally subsiding. Last year there were no license applications submitted for experiments on open land to GEVB, there are less resources available for governmental, media, and other communication, and if there has once been a staff member exclusively dedicated to deal with GM issues, he/she now surely must attend to other duties also.

The corporate members of the organisational field feature each of the strategies and tactics of influencing legitimacy listed in table 3. Even with active players the *conformity strategy* is the most powerful, although one must note that, by its nature, this is the most visible, and the most public option for creating acceptance. 'We [i.e. people in decision making, or decision preparing position] wish to be good friends with everyone' – that is the intention at a verbal level, and, once converted into action, it means that they inform the decision maker of the corporate view/results, and help him familiarise with or study the subject.

The *strategy of conformity* is reflected – in addition to offering the outcome of corporate research to the community – also by their statement whereby genetic modification is the natural continuation of plant improvement (cf. chapter 6). One may list here also the arguments aimed at dismissing doubts of dominance/power. An argument of this type is that GMOs help multinationals become the predominant actors of agriculture. The retort to this suggestion is embarrassingly simple: all the companies concerned have been present in Hungary for at least a decade, and have built up a major market share, so there is no change that GMO could bring about. Employing the argument of 'economic competitiveness' in the context of Hungarian institutions is aimed at conformity, and represents the tactic of imitation (for more detail see chapter 6).

The reconciliatory tactic of the compromise strategy is the use of environmentally friendly arguments. An example of the *strategy of avoidance* is the fending behaviour experienced by a Hungarian institution that requested sowing seed from the American head office for research purposes. The response was flat refusal saying 'that would be too early for you'. Some companies eventually exit the market, or e.g. they give up conducting open-field experiments, or, in overlap with another strategy: control/manipulation a company calls off its Hungarian lobbying, and relocates it to Brussels perhaps along with their entire local team. With the only exception of Monsanto, the method of avoidance/concealment whereby they just refuse to admit it publicly, and stay away from the media with this subject is generally practised. An exciting amalgamation of conformity and opposition is when, in addition to 'wishing to be friends' they raise a question mark, and start suggesting the incompetence of the relevant policymakers.

The companies themselves, and, even more so other groups involved, primarily list legitimising activities that fit the strategy of manipulation. 'Monsanto used to sit around here week after week' an official from a regulatory authority said evaluating the company's ministerial lobbying as a kind of tiring-out exercise. The tactics of co-opting is useful to create research relationships, and, through that, a special piece of legitimacy built on scientific prestige. Pushing the researchers in the foreground has been suggested by a quotation in a previous part of the chapter. The researcher is being accused of illicit relationships, of compromised professional independence, and of accepting funding from companies. Some researchers actually do publicise their corporate affiliations. Opponents of such relationships tend to adopt mostly the *funding* source explanation, while supporters claim that researchers subscribing to plant genetics and the companies applying their results are natural allies, and the alliance may be motivated by no other than scientific curiosity. When discussing the strategy of control/manipulation, the tactics of inspection must also be mentioned. Actors coming to Hungary in the framework of the US' GMO promotion scheme, same as the US ambassador, try to actively disseminate the pro-GMO view. Opponents, at the same time, perceived a dinner invitation to the embassy as political manipulation when, during the event, they were made to talk to a conflict manager.

Corporate discourses. The faith in development, scientific progress, technological solutions and innovation is expressed by every company. Sükösd et al. [2008] identified two typical discourses of corporate speakers. Some typically have recourse to a kind of language usage and argumentation that they call the fundamentalist pro-GMO discourse, whereas others favour the so-called risk-accepting, technology-optimistic pro-GMO discourse. Note that the authors found that, similarly to the corporate speakers, part of biotechnology researchers also used the former type of discourse. The latter one is also applied by the biotechnology researchers of the field, and also by part of the agricultural environmentalists and the staff members of the regulatory agencies.

According to the fundamentalist pro-GMO argumentation, there is sufficient scientific confirmation for the use of genetically modified plants that is justified primarily by the economic circumstances (higher average crop yields, higher quality) and the environmental ones (less pesticides). Sükösd et al. [2008] call that discourse "without (self)criticism", characterised by a discrediting style, understatements (in

regard of the environmental hazards), and occasionally shadow-boxing and false analogies⁵⁶.

Both discourses are typically techno-optimist, but the authors highlight the difference in their judgements of the interrelationship of scientific achievement and its use. The fundamentalist pro-GMO discourse makes no distinction – "the application of certified knowledge appears as an inevitable necessity" [p. 11] –, whereas the risk-accepting pro-GMO discourse emphasises the difference of the two. A noticeable difference is discernible, moreover, in their attitudes to regulation. The fundamentalist approach sort of challenges the legitimacy of the state in this field, putting free market competition into the foreground, whereas the risk-accepting pro-GMO approach deems the existence and operation of a regulatory and controlling system necessary. In this latter discourse, the speakers acknowledge also the occasional occurrence of environmental and health hazards, but consider those something that can be managed and controlled [Sükösd et al., 2008].

Sustainable Agriculture and CSR. Although environmental considerations have occurred also in corporate argumentation, the topic of sustainability has not been raised. There were not even references to sustainability either in connection with the companies or with agriculture - responsible, sustainable company operation, sustainable agricultural production – through any channel. That is, this topic was missing from the press appearances of the companies, and also from the interviews conducted for this research, whereas it has been present to an increasing extent in the international debates and arguments concerning agro-biotechnology, incorporating also its environmentalecological, social and economic aspects. With CSR (corporate social responsibility) becoming a fashionable topic, however, a certain change has been experienced in Hungary. My own conclusion based on the examination of the responsibility of the companies concerned and their CSR communication (press and website analysis, corporate interviews; cf. Matolay [2010]) was that CSR as such has been integrated into the decision-making and activities of the studied agrarian companies; they have developed and introduced several best practices – communicated to a lesser extent than in other industries, by the way –, but there has been little sign of responsibility-oriented

⁵⁶ Shadow-boxing is an argumentation error [Margitay, 2007], an attack on the distorted standpoint of the debate partner to dispute, in the final analysis, a statement that has not been made. It is similar to the original statement, but it is a weaker version that is, therefore, more difficult to defend and support. The argumentation error leads out of the debate framework, but its use may provide a negotiating advantage, and hence its use may be not so much an "error", but rather an intentional technique. A false analogy is a picturesque, but limping metaphor.

reflection on the activity of the company. In connection with CSR, most of the companies concerned speak in the overwhelming majority of cases of activities and developments incorporated in specific action (donation, volunteering, collection of employee ideas for the same, material- and energy-saving at the office or in the context of travel). Within that, only a most narrow group presents such programmes – mostly deriving mainly from the international background of the company – that are in direct correlation with the core activity (seed donation, scholarship programme, avoidance of damage caused by agriculture, soil and water protection programmes, joint research to preserve the biological diversity of agricultural areas). The interpretation of biotechnology in the framework setting of responsibility and sustainability can be detected in the following ways:

- the Hungarian websites of part of the companies contain links already to the English-language contents of the parent company on sustainability, sustainable agriculture; they display no content in Hungarian nor do they discuss any (potential) Hungarian implications. They interpret sustainability as contribution to intensive agricultural production, and as the use of biotechnological products as part of it.
- even in case of journalist and researcher enquiries (for the first, see the interview series of Pólya and Varanka [2009, 2010] on the CSR of companies producing agricultural basic materials), only a very limited group of companies reflect on this topic, and even then they reflect exclusively on the specific question being asked. This topic occurs in the sentences of persons speaking on behalf of Monsanto and Pioneer, in the following way.

The three pillars of the sustainable agricultural strategy of Monsanto dating from 2008 are based on increasing average crop yields (doubling them by 2030 primarily in Africa and Asia), decreasing resources and improving the quality of life of farmers, which the company wishes to attain with the tools of biotechnology and traditional breeding. As they put it, biotechnology might play a role in that because of its being an environmentally conscious and health-friendly method [Pólya(a), 2009]. In the opinion of Pioneer Hi-Bred, the sustainability benefits of biotechnology lie in that the environmental input can be reduced, that is, that's what the company seems to imply by quoting the calculations of a British researcher on spray insecticides applied in current production practice – which could be avoided according to his calculations by planting hybrids which are resistant to the given pests [Pólya(b), 2009].

Communication with stakeholders is a central CSR topic. It is an important starting point in both the normative concepts and practical toolkits of CSR how the company communicates with its stakeholders, how it tells things and how it listens to them. It is a question raised by seed producer and plant protection product manufacturer companies whether they should apply the tools of stakeholder communication, stakeholder involvement and dialogue in regard of biotechnology, a controversial product and technology (for the CSO communication strategies, see e.g. Morsing and Schultz [2006]). All in all, that activity is ad hoc, non-systematic, not bi-directional and non-strategic even at the companies that are the most active in biotechnology-related public communication and the ones that express the importance of communication in their guidelines. That is, they may from time to time attempt to introduce seed-producer farmers and journalists with the GM plants and the relevant production technology - to the extent of even funding a trip abroad -, but such efforts are far from being bidirectional, they do not concern the wider group of stakeholders and they are far from transparent - that is, all things considered, they cannot be evaluated in the positive framework of corporate social responsibility, and the same is true of the lobbying activity targeting the regulatory authorities.

If we regard CSR as a means of creating enterprises that are sustainable in the economic, social as well as ecological sense (see Tóth [2009]; Győri [2011]), in the companies under study, CSR and sustainability go their separate ways: no correlation, no connection is established between the two and, in summary, both are present in a marginal way.

6. Researchers' media discourses

Those concerned by plant biotechnology (as plant geneticists, plant breeders or researchers of the effects of GM plants) have played a significant role the world over in the legitimation processes of agricultural biotechnology. The consequences of legitimation spill-overs described in Chapter 3 in connection with the university/corporate associations and associative legitimacy are not limited to the organisations themselves; through the associations, they affect the legitimacy of biotechnological enterprises. The relevant international researches have also shown that the utterances of researchers and the public appearances of scientists may well represent a legitimation resource of merit for policy making and for shaping public opinion.

The most active actors of the legitimation processes visible in the Hungarian organisational field of agro-biotechnology are part of the researchers themselves. The background and underlying reasons of this phenomenon are summarised in Chapter 5 and my analysis of the media debates of researchers is justified in Chapter 4. The present chapter introduces the reader first of all to a thoroughly investigated area, the analysis of the media representations of agricultural biotechnology by presenting first the relevant international researches and then the Hungarian ones. After discussing the considerations underpinning my choice of the six media debates of researchers, I analyse the latter in detail along the detected argumentation strategies and narratives. The last part of the chapter, Section 6.3, examines the possible interconnections between my empirical findings and the outputs of discursive researches and of Suchman's legitimacy typology, respectively.

6.1. Agri-biotechnology in the printed media

Media representations of agricultural biotechnology represent a popular area of research where studies are primarily focussed on collecting and analysing press publications. Although some of them contain a certain pre-selection in respect of contents (themes, cited actors, etc.), the key criterion of selecting writings for analysis is the place of release. The current research fundamentally departs from that method of choosing its area of focus in almost every respect. At the same time, these media research projects –those focusing on both the international and domestic press – can provide an important backdrop and reference points for the analysis of researchers' debates covered by the domestic printed media. Therefore, in what follows, two

analyses of the contents on agricultural biotechnology covered by the domestic press will be presented (See a more comprehensive media analysis in Matolay [2006]). In selecting the above-indicated international researches, I was driven by my intention to present three studies having different objectives and methodologies; as for the Hungarian analyses, I strove to cover the entire field and hence in the following I will review all studies known to me that go beyond the level of press material processing by undergraduates.

6.1.1. International media research

Even though there are also numerous examples of studies of press coverage of biotechnology in some European countries (see Kohring and Matthes [2002] Germany, Castro and Gomes [2005] Portugal, and Maeseele and Schuurman [2008] North Belgium, exploring press publications in their respective countries), the overwhelming majority of analyses are focussed on the Anglo-Saxon media (e.g. Bauer et al. [2001], Nisbet and Lewenstein [2002], Ten Eyck and Williment [2004], Cook et al. [2006], Nisbet and Huge [2006], Augoustinos et al. [2010]). In one of the most complex studies examining the media appearance of agricultural biotechnology, Nisbet and Lewenstein [2002] attempted to find a connection between the public political process and elite media representations. The co-authors used a quantitative content analysis technique to analyse the issues of The New York Times and Newsweek between 1970 and 1999. According to their initial hypothesis, if the media shape and place into a specific frame an emerging polemic in the early stages of a public debate, public political decisionmakers will find it very hard to reframe or reposition it. In this sense, the media are part of the process of public political agenda-building by way of frame-building. From the aspect of contents, different powers seek to influence the media's agenda-building and frame-building role by supplying journalists with strategically pre-produced "news packages" and stories based on their own interests. In other words, becoming a "source" of news reported by journalists means a strategic power position and the successful acquisition of such a position can even result in hegemonic media representation in respect of a particular theme.

Their conclusion was that in the 1970s the prevailing "frame" in which biotechnology appeared was scientific progress. Mention of the potential benefits of biotechnology far exceeded that of risks – and it was university researchers and scientists who featured biotechnology articles released in that decade [pp. 376–379]. In the following decades, the frame of progress continued to prevail, while in the 1980s economic potential also emerged as a second fiddler, thanks to the rapid rise of industrial applications and the appearance of the first biotechnological products. University researchers retained their lead role in the media, but due to the proliferation of industrial applications, company representatives and scientists also frequently appeared in the media during the decade. From 1997, public debates on cloning broke the hegemonic frame of interpretation (i.e. the dominant frame of scientific progress and economic potential) and created opportunities to discuss the issues of ethics, public accountability and the role of the general public, and for debates to appear at all [pp. 382–386]. Accordingly, the number of articles thematising the "debate" also sharply increased along with the subject of risk gaining ground, although not at the expense of mentioning the benefits. As to actors, the predominance of university researchers and industry representatives continued to exist. At the same time, "public opinion" as a standalone actor acquired an important role in debates on biotechnology. Players like environmentalists, nature conservationists, and consumer and agricultural advocacy groups remained sidelined.

Ten Eyck and Williment [2004] examine the coverage by the printed media of pasteurisation, food irradiation and GM foods based on The New York Times and The Washington Post between 1972 and 2000. As a general conclusion from a coding technique used as a tool of analysis, they note that the early media representation of food biotechnology is characterised by what has also been observed by other researchers about nuclear power, namely that the prevailing pattern in which the new technology in question is discussed is to present it as the epitome of "progress". Contemporary media representations therefore almost entirely lack a tone pointing to negative aspects; if those appear at all, they are presented as concerns that science educating the general public would soon dispel. Presentation emphasising progress relies on very similar toposes with each technology, e.g. that technology "saves lives" by improving both the quantity and quality of food (see those starving and suffering from vitamin deficiency and by making foodstuffs more durable (less perishable), etc. Typically, therefore, the early media representation of the new technology highlights its useful aspect or contextualises it as something promising to solve certain global problems held important by the general public.

Ten Eyck and Williment (2004) at the same time point out that the prevailing pattern of the media changed 10 to 15 years after the initial coverage of the technology. Although the tone has remained positive and benefits are still stressed, new toposes emerge and with them more sceptical opinions also trickle in. One of the new toposes in that period is the free choice and consent of consumers and, related to that, the problem of product labelling. Taste and other product characteristics are also emphasised, but always in an unambiguously positive "light" – biotech food is tastier and has a higher nutritional value, or biotech crops have higher yields and are more resilient, as predominantly represented by the media.

The topos of regulation receives growing emphasis by the end of that stage, as has been found by Ten Eyck and Williment (2004). Particularly, regulatory issues related to human health come to the fore and increasingly become the object of public debate. In consistency with other earlier research findings, it is also observed with biotech foodstuffs that journalists – in addition to working with *storylines* similar to each other – have a tendency to rely on certain experts and give them preference when obtaining information. As was also found in earlier research, the four key institutions whose experts are given preference are: the courts, the police, the legislature and large enterprises. However, in respect of biotech's media representation, it is observable that although the above-mentioned experts continue to be given a dominant role, the voice and opinion of different NGOs and movements also begin to be heard. Thus, debate is allowed much greater room e.g. on biotech foodstuffs' healthiness or whether they offer the best solution to eliminate childhood malnutrition and starvation.

Castro and Gomes (2005) analyse the thematisation of *genetically modified* organisms (GMOs) in the Portuguese press. Their empirical study covers three Portuguese dailies and two weeklies encompassing a three-year period of 1999, 2000 and 2000. Their theoretical point of departure is that biotechnology is a "battlefield" where battles are waged much more with the tools of language than with those of science. Accordingly, they find the debate on biotechnology suitable to analyse what role language plays in promoting social changes or, more specifically, how by using old linguistic categories new meanings and interpretations can be instilled in society. Thus the press becomes an important area of scientific research. The co-authors rely on *social representations theory* in order to interpret "how innovation in biotechnology progresses through society", or "how what is old constantly re-emerges in what is new"

(Castro–Gomes, 2005: 5). The technique they use to analyse the press is built on pairs of antonyms known as "themata" (e.g. nature/culture; reason/emotion; beautiful/ugly etc.) and the category of *anchoring*. The *modus operandi* of the latter is shown by what earlier discoveries, diseases or other phenomena biotechnology is attached to. Therefore, the research question for the co-authors was to uncover the "themata" most frequently used in relation to GMOs and the categories ensuring anchoring.

Based on the analysis of 239 articles on GMOs, Castro and Gomes (2005) distinguish two general semantic spaces. One is structured by the pairs of antonyms of health/disease, risk/safety and benefits/threats, where biotechnology is linked to the anchoring categories of Progress, Pollution, Disease and Science. The other is organised around the pairs of antonyms of nature/culture and local/global and is anchored to biotechnology by the categories of Ideology and Agriculture. Obviously, in the former semantic space, biotechnology receives a more favourable thematisation as it is connected to earlier scientific results and thus progress, while its effects are linked to past diseases and contrasted with health. In the other semantic space, biotechnology has more unfavourable connotations as GMOs are related to earlier agricultural interventions that raise the prospect of interfering with nature or even projecting disaster scenarios. According to Castro and Gomes (2005), since the health applications of GMOs associate them with the positive categories of Progress and Science, they have more favourable future prospects than agricultural applications (p. 13). The co-authors attribute this fact to medical science's success in legitimising the increasing technicisation of the human body (p. 14). However, as opposed to the human body, "what happens in both our plates and in our soil is still more clearly defined as belonging to the realm of the natural" (Castro-Gomes, 2005: 14). Therefore, among genetic engineering techniques, those applied in agriculture face a greater legitimisation challenge, given the connotations attached to the release of GMOs into nature.

6.1.2. Hungarian media research

The first to respond to the biotechnology-related content of the Hungarian press was Krista Harper [2004], who – primarily based on interviews – identified a turn in the media in respect of 1990 and the early 2000s, which was a more frequent and more anti-GMO media representation in the wake of the Pusztai case.

Gyula Kasza and Zoltán Lakner [2012] have performed a qualitative discourse analysis of articles released between June 2000 and November 2008. In the period under review, it was a business, Monsanto, that most often appeared in the press (in nearly 13% of the articles) – although the research report does not reveal whether in the capacity of interviewee, opinion leader or one of the biotechnology actors. It is to be noted that no other company name is included in the list of Kasza and Lakner [2012] and, therefore, it appears that it was only this company that was associated with agricultural biotechnology in the articles released in the press during the period under review. The second most frequently mentioned actor was the Ministry of Agriculture and Rural Development, followed by Greenpeace, in about 12% and 11% of the cases, respectively.

Most of the arguments for GMOs identified in the articles published associate plant biotechnology with innovation, and controlling them by regulations would violate the principle of economic freedom, as the authors conclude. In other words, in terms of frequency of mention, economic and business considerations rank first followed by solving third-world countries' food supply problems by means of GMOs. The third most frequently used pro-GMO argument points out reduced chemical use. Among anti-GMO arguments, the leader is the abuse of economic power by biotechnology businesses in third-world countries. The second most frequent type of argument against GMOs in the press publications under study refers to the lack of information and the need to know more about GMOs to be able to decide whether they can be supported. As the third most often used argument, GMOs' allergising effect was also covered by those papers.

Overall, according to the authors this theme is given relatively little coverage in the Hungarian media under review. However, there is always a charismatic actor who determines the focal points of media representation in most of the articles published [Kasza and Lakner, 2012].

Lilla Vicsek [2012] has analysed articles released in papers with the highest daily circulation including two political broadsheets (Népszabadság and Magyar Nemzet) and two tabloids (Blikk and Bors) during a two-and-a-half-year period between May 2007 and October 2009. The author also gives an international comparison of the results of quantitative content analysis. According to her findings, an anti-GMO attitude dominates in the articles (genetically engineered plants and foodstuffs nearly four times as frequently appear in a negative frame as in a positive

one), while – as was also seen in Nisbet and Lewenstein's [2002] research – an emphasis on benefits and positive aspects is what dominates the American and British media. However, it should be stressed that, according to Vicsek, agricultural biotechnology is given limited coverage and importance in the domestic media; it hardly ever makes the headlines and the theme is covered by the tabloid press far less frequently than by political daily broadsheets [Vicsek, 2012].

6.2. Media discussions of researchers

In the past somewhat more than a decade we witnessed researcher debates on agricultural biotechnology in the domestic press almost annually. I do not mean scientific communications published in science journals, but articles written for the purpose of awareness raising, addressing either the researcher community or the general public, often in the genre of (political) journalism, reflecting on one another. In 1999, an exchange of articles started in the journal *Biokémia* (Biochemistry) and almost at the same time in *Magyar Tudomány* (Hungarian Science) on the potential benefits and hazards of the agricultural application of biotechnology. The authors of the article series were representatives of (certain) fields of science affected by biotechnology, including researchers in biology, biochemistry, molecular biology, biotechnology, plant genetics, plant improvement, ecotoxicology and other natural sciences.

The regular flaring up of media debates is certainly attributable at least partly to the legislative-institutional changes effected in the meantime, of which they are the concomitants. Apart from informing the lay public, the goal of the media actor's role assumed by the participating researchers through their own writings (and also the rather frequent interviews with them and their contribution to articles of journalists referring to them or actually asking their opinion) is, presumably, related to the development and shaping of public policy agenda and of the framework settings of parlance, as highlighted also by Nisbet and Lewenstein [2002].

6.2.1. Argumentation strategies

It is no exaggeration to say that researchers' media debates have created a rhetorical battlefield in the discussion of genetically modified plants. The parties in the debate themselves use such terms as *GM battle, victory, winners, opponents,* or *emergency.* In what follows, I will demonstrate what rhetorical and argumentation tools

are being deployed by the parties in the debates of the representatives of science to defeat each other's position. These – as we will see – are verbal crossings of swords undertaken to achieve legitimacy, or to de-legitimise the opposing position. Let's note that these media debates are triggered each time by the publication of an article aiming to support the application of biotechnology in agriculture, and to allay related fears (we will hereinafter call these *GM technology supporters*). Typically, an article of this type is answered by one or several articles that aim to emphasise the uncertainties, problems, and dangers surrounding GM technology (hereinafter called *critics of GM technology*). My analysis has revealed five tactics to obtain legitimacy, and five to de-legitimise: labelling, exclusion, favourable comparisons, decoupling and down-playing.

In the analysed debates⁵⁷ the authors give ample ground to positioning themselves and their adversaries. One of the prominent central topics of the media items on agricultural biotechnology written for the purpose of awareness raising or persuasion is actually that of the scientific researcher. It is about the authors participating in the debate and takes the form of descriptions, profiles of researchers participating in the debate series on behalf of the other pole. That is, although the researchers concerned enter the debate to discuss the pros and cons of agricultural biotechnology, they focus their attention and statements not (only) on that topic, but also on the persons participating in the debate. The argumentation strategies that will follow right away relate directly to this topic. Before their presentation, I consider it important to note first that although this topic is of outstanding significance in all debate series, some authors are more while others less active concerning it. That is, although the argumentation strategies below – including those associated with the researcher's identity and with scientific quality - have taken shape on the basis of all the debate series subjected to analysis, there are obviously some differences in terms of measure and style between the articles and the authors. Secondly, let me note that the expression of opinions focusing on persons instead of (or: in addition to) the topic itself does not, cannot, promote the approximation of the standpoints. Neither is that an explicit objective, by the way. But apart from underlining the description of the GM "camps" as contrary

⁵⁷ The explored argumentation strategies are significantly reminiscent of the ones identified by the technical literature on organisational theory in the discourses of company leaders in relation to the environmental protection challenge (see Pataki [1999] and Pataki [2000: 70-73]). In psychology, Nobel-prize winner Albert Bandura pointed to the phenomenon which he calls *moral disengagement mechanisms* [Bandura 1991], through which the actors detach themselves from the moral consequences of their action and reject the moral criticism of others.

poles, as a dichotomous pair – whereas part of the actors concerned emphasise that they are neither opponents nor advocates, but thinking, weighting individuals –, focusing on the persons concerned, cannot take us in a constructive direction. (Cf. e.g. Zoltayné [2005]; Gáspár and Matolay [2010] on constructive, creative and destructive conflicts). For the above reasons, I will start my analysis by investigating what phrases and words the debating parties apply to refer to/describe the others.

In the following, I will refer to the supporters and critiques of GM technology shortly as GM supporters and GM critiques, respectively. That implies no judgement concerning the individual standpoints of specific actors and refers itself in a simplifying way to two blocks. Of course, the situation is much more complex in reality, but the debating parties do squeeze each other into these pigeonholes, so in this sense it is justified to use the same dichotomy in this context.

In what follows, typical phrases, concepts and terms from the media debates will be put between quotation marks. What is important here is not the identification of their respective contexts (this is why no references are indicated), but their being frequently used typical expressions of the participating authors.Let us first see in detail what phrases, and what words the debating parties use to describe and characterise each other.

Rhetorical	GM supporter	GM critic
means	writing about critics	writing about supporter
Typical verbs	Abuse(s)	Declares
	Makes mistakes	Makes mistakes
	Is not interested	Does not justify
	Is not shaken	Excludes
	Fights	Stigmatises
	They do not wish to consider	Marginalises
	scientific facts	
	Tries to hinder	Sweeps under the carpet
	Manipulates facts	Their imagination has no limits
	Ignores	Uses weak arguments
	canvasses, convinces	Confuses
Typical	Committed	Dishonest
Attributes,	Organised opponent	Not neutral
adjectival	Deaf and blind	Unlawfully
phrases	His dogmatism is unshakeable	His metaphors distort the truth

Table 9 Rhetorical means to identify the party in debate

Reading papers supporting GM technology, one can state that the typical description of the other party is 'the opponent', who is a 'committed opponent', a 'fighting activist', a 'dedicated opponent' or 'adversary'. That opponent may by no means not be called a fair rival as his acts are being described almost exclusively by verbs with a negative connotation, and by adjectives carrying an unfavourable overtone. However, one should not be worried about the other side either, as they also describe and characterise the activity of their 'rivals' using a similarly derogatory vocabulary. The table below is a collection of the language referred to above.

This rhetorical and argumentation tool set also suggests that the parties essentially doubt each other's competence and good faith. This is where one feels that the GM issue is being presented as the fight of – so to speak – 'good' and 'evil', or the duel of 'white knights' and 'black knights'. All that, of course, is an argumentation strategy applied not only to the actors, but also the subject of the debate, i.e. GM technology. The way the debating parties talk about the technology itself reflects a similarly polarised rhetoric. Here again, it would be hard to find sophisticated arguments or papers striving to balance arguments for and against. In terms of the technology, in the articles of one party, positive adjectives abound, while in those of the other negative adjectives overflow. I collected a few also of these.

GM supporters about the technology	GM critics about the technology	
Novel, new, novelty	Causing dependency, increasing	
	exposure	
Highly efficient	Dangerous, disadvantageous	
Serving numerous objectives	Costly, more expensive, unsellable, at	
	the service of short-term profit	
Representing leading-edge technology	Excluding, threatening with extinction	
Determining competitiveness	Problematic, inappropriate	
Gaining worldwide popularity	Further increasing ecological and social	
	problems	
Environmentally friendly, having obvious	Polluting the environment	
ecological advantages		

Table 10 Attributes, adjectival phrases to characterise GM technology

All these negative descriptions (or even 'defamation') used in argumentation refer to attempts at depriving the other party of their legitimacy (de-legitimisation) at the level of these micro texts. The legitimising tactic used here may be called *stigmatisation of the other party*. In summary, then, this is an argumentation strategy applied by both parties, primarily to characterise each other and the technology concerned, and also to describe the companies related to the latter. Since the argumentation strategy of stigmatisation embodies a negative approach, the critiques of biotechnology apply it in connection with more topics (hence also the technology and the companies) than its supporters (who use with reference to those who argue in favour of the opposite stance).

A rather sophisticated form of de-legitimisation is found in an early polemic article in which the 'opponents' of GM technology are compared to the 'scientist', the representatives of science. The table below displays the related phrases, highlighting the opposing pairs:

	Opponents of GM	Scientists
	technology	
Basic stance	Dogmatic	Neutral
His relation to facts	Remains unswerving	Examines
His relation to science	Disguise, mask, veil	Honest professional
His action	Fights with dedication	Decides by means of
		experiments

Table 11 "Scientist" vs. "opponents"

The strategy of the text is perfectly clear: Draw a demarcation line between genuine science and fake science, genuine scientist and fake scientist. To achieve that, it does not only mobilise rhetorical resources to accuse the opponents of GM technology of committing mistakes and abuses, but also attributes to them a strategy using science just as a cover-up, to hide his true interests. And the way the author refers to the 'scientist', attributing to him positive acts ('disputes', 'examines', 'reaches consensus' 'agrees'), the reader is made to see immediately that the 'opponents' do not belong among scientists. They do (in the text) a series of things which the scientist living 'in the world of reason' - a 'weighty', 'knowledgeable', 'serious' professional - would never do. The opponents 'practically never have' the basic stance typical of scientists, i.e. having a neutral premise, from which they form their well-considered position, and make their decisions following the investigation of facts, and deliberation. Opponents of GM technology seek arguments to support their positions 'they have always had', i.e. their premise is rejection, clearly not qualifying as neutral. The dedication of these 'organised opponents' ('activists') cannot be shaken even by facts; moreover, they 'do not care' for facts. That is to say that 'their dogmatism is unshakeable' - the author pronounces the verdict. They may go as far as tabling arguments 'previously proven

wrong'; i.e. even seeing their arguments refuted does not deter them from their conviction.

The objective of the article is clear and rhetorically effective: opponents are incapable of debate and have no place in science. Scientists committing regular errors, critics of GM technology gradually become representatives of fake sciences, or non-scientists at least. So the author draws a clear line of demarcation on the battlefield between scientists and non-scientists participating in the debate, i.e. between genuine science and fake science. This is a creative argumentation strategy to oust the opponent from the realm of reason where sensible debates may be conducted among scientifically qualified people. That legitimation tactics may be called *exclusion*.

All this is, at the same time, a clear move by the political élite as it *determines* and *excludes* at the same time. It determines who is a scientist and who is not, and what is science and what is not. At the same time, it also determines who can speak legitimately (who can participate in the debate), and who lack legitimacy even to speak. The author – obviously a scientist himself – takes a logical and resolute turn (a new move by the political élite): he proceeds to 'decide' which questions are legitimate and which ones are not; i.e. what is subject to debate and what is senseless and illegitimate to debate over. In accordance with the statement of the person saying the above, there is no major conflict 'inside the scientific community', there is only some debate over issues of detail among experts, and as regards the entirety of GM technology, 'yes, there is consensus'.

'Opponents', i.e. critics of GM technology apply the 'defamatory' argument (i.e. the legitimation tactics of stigmatisation) in conjunction with companies with an interest in GM technology. To reflect their summary judgment, it is worthwhile collecting all the adjectives and modes of action that they attribute to companies, mostly multinational seed producers involved in GM technology.

Multinational seed producers			
They are the only ones who generate profit			
They assume no responsibility			
They transfer the disadvantages			
They neglect			
They operate and behave in an unethical, or ethically			
objectionable manner			

Table 12 Actions attributed by GM critics to seed producers

Not only would nobody be happy to do business with economic actors of this description, but the lack of fundamental confidence toward them – which is justified in the light of the text – even questions the very legitimacy of their existence. Supporters of GM technology in the debate respond to this by referring to the enlightened interest of large companies concerned. That is because their writings suggest that their interest lies in long-term success and the return of their investment, that is why they are not interested in denying the possible threats involved in their new developments. Moreover – one of them warns the reader – it is an 'important fact' that the 'very rigorous control and evaluation' of these developments conducted for 'over half a decade' 'has not identified harmful consequences'. It is not difficult to realise that – to use Suchman's categories – while the critics of GM technology stay within the moral dimension of legitimacy (referring to the character and identity of companies), supporters of GM technology try to use arguments (profit, and interest) belonging rather to pragmatic legitimacy.

T actics to obtain legitimacy by the parties through favourable comparisons is often seen in these texts. The most frequent contrast among these comparisons is the 'gene technology vs. traditional breeding', and both parties use it. Less dominant, but still present is the contrast of 'traditional vs. intensive agriculture'. At this point I only concentrate on the first, and present it in more detail.

	GM supporters	GM critics	
Gene technology	Novel, new, novelty	Practice did not justify it, too few results	
	High efficiency	Unsellable, sells only at a low price	
	Its benefits have	More costly production, more	
	materialised	expensive sowing seed	
	Threats did not motorialize	It increases the use of chemicals, and	
	Threats and not materialise	it pollutes the environment	
	Particularly promising	It is disadvantageous for the domestic sowing seed industry	
	Generates significant profit	Has no market advantage	
	Its sowing area rapidly	Fails to comply with the domestic	
	increases	agro-ecological conditions	
Traditional breeding	Slower	Produces species in line with demand	
	It is more costly	It has further potential	
	Has limited potential	Domestic species	

Table 13 Gene technology vs. traditional breeding

The parties in debate – instead of balanced deliberation – apply polarised rhetoric again: for one party, gene technology is better in every dimension, while for the other party, traditional breeding carries off the palm.

It is worthwhile stressing that this legitimation tactic is often being applied by representatives of different disciplines, namely microbiologists and plant breeders in their argumentation. Thus it would be hard to bring justice, because while one party says about one technology that it is cheaper and generates considerable profit, the other party claims the same concerning the other technology. The party with a typically microbiological background sees unique potential in gene technology, while the representative of the domestic plant breeding profession explains at length the untapped potential in traditional breeding. In the course of favourable comparisons, both parties assess environmental effects also, and they have opposing views regarding further 'results' (benefits and dangers) of the technologies.

The argumentative trick within the legitimation tactics of favourable comparisons that GM technology supporters apply when 'accused' that GM plants are 'unnatural' is particularly interesting. While applying the tactic of favourable comparison, they stress the novelty of gene technology, and its character 'essentially different from traditional methods', and they suddenly take a 180-degree turn in the debate, and start highlighting the 'theoretical', and 'essential' similarity of the two technologies. Their argumentative U-turn is best shown by remarks such as 'they do not differ from those to an extent large enough to justify being called radically different, e.g. unnatural instead of natural'. Their other argument whereby 'genes from one species can enter other species also through a natural process' also tries to support the similarity of gene technology. They try to eliminate the argument of those warning of danger by saying that 'natural breeding may also have undesirable, moreover, dangerous, unpredictable, side-effects'. Moreover, gene technology and traditional breeding do not actually differ because - so they argue - both 'involve numerous unnatural techniques'. The contradiction in the argumentation is obvious: gene technology and traditional breeding are 'substantially different' and, at the same time, 'not essentially different'. The argumentative tactic is called 'argumentative crossover' in international literature.

The legitimisation tactic of favourable comparisons seems useful for arguers even if the safety (or dangerousness) of the agricultural application of the GM technology is benchmarked to other areas, typically to medical/pharmaceutical applications. On the one hand, they argue that critics of the GM technology employ 'arguments previously proved false' in debates on the medical application of the GM-technology. On the other hand, the nectarine and Bt corn come together in one bowl creating a short, but spectacular narrative. Pharmaceuticals are labelled 'poisons' and with that gene technology products are taken out from the scope of products to be submitted to the testing compulsory for pharmaceuticals and being brought closer to traditional breeding. They ridicule the positions of those claiming rigorous tests similar to pharmaceuticals by asking grumblingly: 'Did a reasonable person ever think of requiring the same tests for this fruit as for a new pharmaceutical?'. This is how the Bt corn (a genetically modified plant) becomes similar to nectarine (a species created through traditional breeding). One could say, this is how the acceptance (legitimation) of the nectarine is transferred by argumentative means to the genetically modified plant. Literature calls the phenomenon 'legitimacy spillover'.

In the face of this favourable comparison, critics of GM technology apply the tactic of detachment which, in the current case, clearly aims at depriving the 'opponent' of the legitimacy of his arguments. Remaining with the example of pharmaceuticals: critics of GM technology stress the obvious differences of the two areas of application as they claim that with pharmaceuticals only the substances produced by the genetically modified living organism enter our body, while with GM foods we consume the genetically modified living organisms themselves. Expected effects, dangers and risks will not be identical in the two cases, and may not even lend themselves to comparison. We see further tactical versions of detachment or decoupling when the agricultural, food industrial / medical and environmental applications of gene technology are separated. In an attempt to fend off allegations of being generally against GM, the two latter areas are labelled 'less problematic' in an attempt to undermine the legitimising arguments of GM technology supporters that try to achieve legitimacy gains from the acceptance of medical applications for the agricultural ones.

The difficulty is that the supporters of GM technology are skilled users themselves of the legitimation tactic of detachment. The point of their argument is the separation of GM technology from the specific modified feature. They say that, when examining the safety of GM technology products and assessing the risk carried by such products, the 'actual qualities of the product or the species must be examined rather than the way in which it was created'. Moreover, 'experts agree' on this (which brings back the rhetorical suggestion of 'whose opinion counts?' and leaves in the dark who actually

counts as expert). The same argument (detachment tactic) is developed in even more detail in another text where, recognising the potential concerns of producing GM plants ('more or less rational, and scientifically well-founded'), a supporter of the technology stresses that 'none of these objections is founded on the fact that these plants have been created by gene technology'. The feature (that the transgene carries) may give rise to some dangers interacting with the natural environment, and may provide 'more or less rational' grounds for concern. Thus the transgene (the feature) and gene technology (the way of production) separate from each other. If the harmful effect materialise, the feature must be blamed, and holding the technology itself accountable is out of the question – this is how the legitimacy tactic of detachment works. All that is strongly reminiscent of the former GATT (today WTO) principle of 'like product' introduced in the ominous tuna-dolphin trade dispute. We need not explain how unacceptable the argument is from an environmental economics point of view, as it denies the relevance of production externalities, while acknowledging that of consumption externalities (which are linked to the features of the product). An ironic hue is added to the story by the fact that the text that applies the above detachment as legitimation tactic for GM technology and GM products starts exactly with the statement that its author "makes an attempt to summarise the position of science'.

As a further move in the rhetorical battle, the parties deploy the concept of risk. Supporters of GM technology almost caricaturing the position of their 'opponent' never miss an opportunity of noting the unscientific nature of any no-risk policy. Their sophisticated rhetoric refers to the fact that 'anyone with some scientific education', not manipulated by the mass media which increases 'danger-awareness' with reference to GM technologies, knows that (i.e. that zero risk does not exist). Here again, the scientist, an 'honest professional' enters the stage, and uses only categories such as 'negative event', 'occurrence probability', 'objective data', 'the current state of science', etc. His 'opponents' (the non-scientists), however – so they argue – 'abuse' the situation, and refer to 'hypothetical dangers' regarding GM technology, for which we lack 'objective data'. And that renders all discussion on risk pointless.

As a further rhetorical step of the risk-debate, they stress that every human invention, be it product or technology, is dangerous (and thus risky). Obtainment of legitimacy concerning GM technology through this tactic called *downplaying* finishes with the conclusion that 'zero risk is impossible to prove in theory, so that requirement is scientifically impossible to interpret, and insensible'. The texts of debate on this topic

do not lend themselves to the actual discussion of, or response to actually emerging risks and, applying good tactics, they claim the universal presence of risks in an attempt to counter this type of criticism. So much so that one article could actually earn the praise of Voltaire's Master Pangloss by concluding with the following sentence: 'Life is a dangerous profession'.

Investigating the written discussions of risk, one cannot fail to notice that only the approaches known from technical literature as technical and economic risk concepts are applied. Reference to probability, and scientific estimates, etc. clearly indicate the presence of the technical approach in the articles of GM technology supporters. At the same time, the economic approach also emerges in the form of advantage/disadvantage calculus. At the same time, the way in which the latter appears is quite meaningful. It does not appear as a 'scientific' approach, but in the context where the possible influences of the GM technology can no longer be examined from 'an exclusively scientific point of view' because of the related economic, commercial and social problems. Although the dangers of 'gene-release' differ from one GM plant to the other, it still carries economic danger – recognised by GM supporters – as it may harm market interest. However, the text, here, too, returns to the logic provided by the technical approach: 'its dissemination is highly unlikely'. It must be noted from a risk theory point of view that the psychological and sociological/anthropological approaches to risk do not appear in the articles. However, regarding psychology, sociology and anthropology also a science, the debate should accommodate such conceptual categories as the voluntariness and equity of risks and risk-bearing, acceptable risk, etc.

6.2.2.Narratives as legitimation resources

Two "narratives" almost always feature scientific debates on GM technology: One is the so-called Pusztai case, and the other is competitiveness. These two narratives actually allow debating partners to "put to the test" the strength and sharpness of their arguments through a sensational case or theme. In other words, narratives are special legitimising or de-legitimising resources in scientific debates on GM technology. Not surprisingly, the legitimisation tactics described in the foregoing chapter appear as part of the narratives. In what follows I will give a broad outline of the two narratives showing their role in the "struggle" for legitimacy.

The Pusztai case as a narrative. Domestic scientific debates on GM technology obviously could not possibly ignore the polemic assuming international proportions on

GM research performed by one of our compatriots. Below, I will not go into detail or take sides on the issues debated, although no doubt there cannot be any observer who would not form an opinion or draw their own conclusions from the case of internationally renowned scientist Árpád Pusztai. However, let us take a look at how the proponents of legitimising GM technology construct the narrative of the Pusztai case serving them as a useful resource (i.e. one supporting their position in the debate).

In the narrative of the Pusztai case created by the advocates of GM technology, stigmatisation as a legitimisation tactic takes a lead role. The protagonist actually appears not in his capacity as researcher, but as an "activist" in that a "campaign launched by Árpád Pusztai" is referred to. It needs no emphasising that a researcher is recognised not on the basis of his "campaigning" activity in today's world; an impartial scientific attitude is hardly ever associated with anyone engaging in this kind of activity. It should be noticed that this role attribution actually deprives Mr Pusztai of the positive image of a "neutral scientist", which is the manoeuvre the proponents of GM technology employ to frame him as an "opponent", all the negative connotations of which were described in the preceding section. The relevant expressions used in this narrative include "definitely misleading", "harmful" etc. And in some of the writings, Árpád Pusztai is referred to as "one of the most renowned critics of GM food". That makes it appear that a researcher can become a "GMO critic", regardless of anything else, if his experiments happen to produce – independently of his intentions – negative results.

GMO advocates believe the Pusztai case is an excellent resource for using demarcation in the debate by separating good and bad science in an effort to quarantine GMO critics as ones representing bad science. In their interpretation we can read about "serious professional doubts" and "ill-fated" and "inconclusive and failed experiments". Moreover, Pusztai's data "would not merit much attention" since – as the judgement goes – "they have not been published even in a professional publication". In other words, what counts – regardless of circumstances – as a scientifically credible result, or actually as science, is what has undergone the customary process of peer review and has been found adequately founded by a community around a particular technical periodical. Whoever does not have this kind of accepted publication on a given subject cannot be "taken seriously". In fact, what the narrative does is separate Pusztai's research in question from his earlier work disregarding his international recognition and – as if he was a beginner – call him to account in respect of the appropriate level of

publication activity. (It also overlooks, among other things, the fact that in the real narrative the unfinished experiment was terminated and the possibility to publish an article was strongly limited by the financiers). Thus the narrative in itself can logically lead to expelling the protagonist and the initial results of his research from the world of science. GMO critics in the narrative constructed in this manner actually become "losers" who cannot even decently complete an experiment and so it is small wonder that they do not issue scientific publications.

The legitimisation tactic of minimisation also fits smoothly with the narrative constructed by the proponents of GM technology. For, as they say, one of the elements in the experiment (the regulating element used in implanting the transgene, which is one of the "suspects" among negative results) is "also ingested as part of normal diet" "without any harm". And with a twist perhaps unusual in science, what is also turned against Pusztai's results in this narrative is the fact that he has produced results that "cannot be explained with any rationally conceivable mechanism at the current level of our knowledge". It may occur to some – perhaps naïve – observers that that is exactly what could make Pusztai's results relevant, as that is how science advances by way of experimentation whereby new mechanisms can be discovered and a new scientific understanding achieved. Instead, the narrative's logic minimises assumptions potentially negative in respect of GM technology saying that although "they are not entirely absurd", they "have no experimental underpinnings whatsoever".

One of the highlights of this narrative is when it refers to authorities in science. The British Royal Society as an organisation representing science is brought into the picture as a scientific authority, after all it is "a prestigious organisation". It is also quoted in the narrative as saying that "it considers his conclusions unfounded". What is more, one of the writings uses a rhetorical trick whereby the author accepts the view of the "authoritative" organisation even as opposed to his own, saying that "I am not ashamed at all that (...) I am inclined to trust the opinion of an impartial committee assigned by the Royal Society more than my own in forming a judgement on a professional debate concerning this field of science". The message is clear: The researcher himself does not need to formulate his own position upon profound reflection; it is sufficient for him to accept that of an "authoritative" body commonly held in high regard in the current organisational hierarchy of science. (It is worth noting that the analyses presented in the preceding chapter reveal the kind of thorough research GMO proponents' expect from the "scientist" in their argumentation (i.e. he should

form his position after thorough analysis of the facts)). Here, however, the opposite happens, as was also seen with the earlier example of "argumentative crossover". At any rate, in this narrative there is no room for individual doubt (scientific scepticism). The evidentiary process has been concluded and the judgement has been passed in the narrative.

Similarly neat is the other narrative of the Pusztai case. Here, the world is "divided" into those "who know" Árpád Pusztai and those who "look the other way" and are "definitely dismissive while relying on the opinion of others". In addition to the battle-metaphor, the legitimisation tactic comes into play here again. The main targets are "commissioners or potential beneficiaries" "whose hunger for money obviously outweighs their wisdom"; who "did not accept anybody's challenge of the legitimacy of their concept"; and who therefore "have engaged in war". A significant element in the flow of the narrative is that through the Pusztai case it draws attention to the state of affairs in science. It reveals the extent to which today's science is independent of commissioners, who tend to be less and less public actors (the authorised representatives of the public good) and more and more private companies and private research-funding organisations. Who are the "commanders" of science?, so goes the question in the narrative. And there comes the answer: "It is predominantly financial interests and the drive to make quick profits disguised as a charitable activity aimed to save mankind." In this narrative, Árpád Pusztai is actually made to be seen as a moral hero who has defied the commissioners motivated by narrow self-interest and represents the neutral and independent stance of the scientist.

It should also be noticed that, especially in the light of what was expounded in the preceding section, this narrative applies the same exclusion-based tactic that was analysed in the case of the advocates of GM technology. Here, obviously, those who have "scrutinised" his results will be the "real" scientists. They are truly the kind of researcher characters who – as has been seen before – stand on a neutral ground from where to formulate their own opinion through a thorough analysis of the facts. In this narrative these persons are the critics of GM technology. And those who "look the other way" and "hide behind the Dodonaic position of an institution thought to be authoritative" do not exactly testify to being real "researcher" characters. This time it is them (the proponents of GM technology) who are outside the field of science or at least are excluded from the category of "good scientists". The sarcastic element of stigmatisation also shows up in one of the relevant discussion papers: "Pusztai's

methods and results turned "bad" when potatoes were not willing to obey the expectations of others". "Others" clearly refers to the commissioners of the research and the proponents of GM technology.

The elements of stigmatising legitimisation tactics in the narrative also include how the critics of GM technology discuss the ethical aspect of the situation. Sparing no big words they envision a "monumental human experiment" as "GM foods already appeared on the shelves of American and European stores while nobody still knew anything about the possible dangers". And yet, that did not pose an ethical problem to companies interested in GM technology as they "always presumed their products to be harmless". Moreover, as has been referred to above in a quotation, it is all about the self-interest of profit-hungry ("variety and pesticide manufacturing variety-killer and pesticide manufacturing") firms under the cloak of charity according to whose "heartrending bluff" they will solve the "food problems of prolific mankind". With an old familiar twist, the narrative exposes its debate partner and reveals that science is but a smokescreen and that the proponents of GM technology are motivated by plain economic self-interest.

As can be seen, the Pusztai case has proven to be an excellent argumentative resource in domestic scientific debates on GM technology since it can be used to form a "narrative" corresponding to the represented purpose or position. With its "lifelikeness", this narrative can become an even more useful legitimisation tool than mere arguments themselves. The narrative can help augment arguments for or against legitimisation or de-ligitimisation that can also be used more effectively in the GM battle.

It is also worth noting that this narrative fits in well with the discourse pattern of our "modern" era as it is about science, the researcher, technological advancement and progress.

The competitiveness narrative. This narrative is not about a conflict related to a person but is a "naturally" available resource in today's prevailing market economy discourse. It is a positive category unchallenged by everyone (or by the majority, to be precise) and is a goal to be followed and achieved. Adopting the value of "the more competitive, the better" seems natural and so it may be surprising to consider it a value as it is so natural and neutral and almost universally good. Not surprisingly, therefore, the participants in the GMO debate exploit this resource to support and reinforce their goals, opinions and arguments. It should be noted that neither of the parties engaging in the debate comes from an economic background – it is almost exclusively natural

scientists who "make use" of the competitiveness narrative as an argumentative resource. Naturally enough, it is a relevant comment only in the light of the fact that partners in the debate always call each other to account in respect of professional expertise. In this respect, competitiveness appears to be a highly democratic theme for everyone to exploit. Let us then see the parties' specific competitiveness narratives.

The competitiveness narrative of the proponents of GM technology can be arranged into the following argumentation structure: Gene technology is a new leading-edge technology – Competitiveness is determined by how advanced technologies are – The global market of new technologies grows while the markets of other technologies shrink – Therefore, those countries will have a competitive agricultural sector in the future which provide a supportive environment for gene technology.

This narrative easily interprets as a tragedy – an "agricultural menace" – the Government's intention to "ban GM technology". The domestic agriculture sector is menaced by whoever "tries to hinder this leading-edge technology and hence the domestic introduction of a plant-growing practice that determines competitiveness". The critics of GM technology almost become backward-looking "Luddites", roadblocks to progress (they are characterised as having "ideological bias", "professional ignorance" and even spreading "unscientific misinformation"), as is pointed out by the legitimisation tactic of stigmatisation. The "activists" – as is "typical of them" – disregard "scientific facts and wide-ranging international experience" and "cite scientific results subject to international controversy". And yet sadly, as the narrative goes, they "succeed spectacularly" in having "their fear-mongering tracts published even in government materials".

Global competition mercilessly leaves behind those who "fail to see" the "economic and social consequences" of a moratorium on GM, as the narrative continues. All this "has been understood (also) by EU decision-makers", among others, under pressure of "technological competition from American and Asian countries". In that light, "there is no explanation of how Hungary's agricultural leaders can assume the role of laggards". That is how, according to the narrative's logic, the "spectacular success" of GM critics leads to the role of "laggards", one that cannot possibly be desired by anyone. The competition metaphor is also an excellent choice in the sense that who on earth would wish to become a loser in it (see also the stigmatised "loser" role); it is not good to lose, be it whatever competition. That (i.e. playing to lose) "cannot be explained", says the narrative-teller in this narrative. At the same time, the tactic of favourable comparison also comes into play. While "competitors use favourable regulations and growing R&D resources to facilitate" the spread of leading-edge technologies, "Hungarian farmers are excluded from exploiting these technologies". Prohibition and opposition in fact obstruct the spread of the "plants of the future" and become an obstacle to maximising efficiency and reducing chemical use, limit consumers' free choice and cause farmers to lose their markets in the eyes of the advocates of GM technology.

In this narrative, reduced competitiveness also raises the prospect of the agricultural sector's impaired ability to respond to predictable challenges such as climate change. The tone is again dramatic here: It predicts "drought calamity" where "the land is a bleak sight" and "our ambitious bioenergy plans go up in smoke". Surprisingly, but again there is fear-mongering behind the statement that "professional analyses remind us of our vulnerability". And, again, here comes probably the most often used phrase "no explanation" (i.e. irrational, incomprehensible, outside the world of reason). Not only does "rejecting leading-edge technology diminish our competitiveness today" but it will also "increase our vulnerability in the future".

The underlying theme in the competitiveness narrative of GM proponents is the un-verbalised assumption that technological progress by definition progresses in the right direction and that global competition is a pressure no one can avert. In other words, whether we like it or not, gene technology is here to stay and whoever fails to jump on this "bandwagon", which embodies leading-edge technology will hopelessly lag behind high-tech farming economies. In the competitiveness narrative of GM proponents, the warning sounds logical: "The competitiveness of Hungary's agricultural sector is facing a great danger".

The competitiveness narrative of the GM critics is not as dramatic (about the looming "menace") as the one of their "opponents" (as was seen earlier). Their argumentation logic can be outlined as follows: The population of Europe rejects GM food – Therefore, the market of GM varieties is very narrow – Furthermore, there are no domestic GM varieties but there are strong domestic foundations in traditional plant-breeding – Therefore, preserving a GM-free status means a competitive advantage.

The narrative-tellers do not even have to rely on the argument of "consumers' aversion" ("there is no demand for GM products in EU markets") as it is not disputed by GM proponents themselves. Although the latter attribute consumers' deception and fear, and hence the lack of demand, to misinformation spread by the media and the "activists",

GM critics do not fabricate any particular counter-argument in response. However, under the delegitimisation tactic of stigmatisation they do point out that "domestic plant gene technology has not produced any practical results to date". Why invest resources in a technology that has not shown any meaningful performance yet, as the narrative thread questioning usefulness at the core goes.

GM varieties found in the international market belong to multinationals, and so in fact all GM proponents "peddle" these varieties for the domestic market. How could that serve the competitiveness of the domestic seed industry and agriculture?, as the GM critics' narrative wonders with a sense of legitimacy. Obviously, not in any way: "Replacing our varieties would do our plant breeders no good". Licensing GM varieties would put domestic plant breeding at a disadvantage in the market, as the conclusion is drawn in the GM critics' narrative.

The legitimisation tactic of stigmatisation obviously alludes to a particular concept of "domestic interest": "Engaging GM varieties in production would evidently mean a switchover to multinationals' varieties". It would be not only the domestic seed industry that would suffer a blow but also domestic research with all the implications affecting long-term competitiveness, as the narrative of GMN critics warn. Moreover, at this point the narrative takes a turn towards market threats as "multinationals obtaining a monopolistic status could raise their prices at will".

Applying the legitimisation tactic of favourable comparison, GM critics liken the predictable impacts of gene technology to what was known as the green revolution in the past. At this point, they mix social and distribution elements in their competitiveness narrative: "Only the owners of large areas land were able to buy" and "smaller landowners became uncompetitive and went out of business" and thus "it added to social disparities". Similar impacts can be expected with GM technology.

In addition to the looming threat of losing export markets, the narrative of GM critics envisions the hopeless state of susceptibility, in this case obviously as a consequence of GM technologies possible proliferation. This "unprecedented dependency" can result from none other than the international regulatory framework of intellectual property rights, whereby "our basic food crops become corporate property", as the narrative-builders draw the sad conclusion.

In the GM critics' competitiveness narrative, a positive image of the future is built on an agriculture which is "diversified"; is "chemical-free"; "incorporates landscape protection"; is "labour-intensive"; and "meets high quality standards".
Based on the identified argumentation strategies and narratives I am going to reurn to the legitimacy tipology of Suchman, and discursive strategies og Vaara et al [2008] in Chapter 8.

7. Consumers' perception

The present chapter aims to process the methodology and outcomes of consumer research concerning agricultural biotechnology with special regard to investigations using focus group discussions. I completed a systematic search and compiled a 50-page long analysis of the relevant international research. I cannot include that in this dissertation, so please see a rich table in the Appendices summerising the main features of the international research in this field. I am going to introduce the local research here, plus the main findings of the focus group discussions that taken place in this research. Methodological characteristics are involved both in this chapter and in the Appendices.

7.1. GMO-related consumer research in Hungary

Over the last fifteen years a number of studies have attempted to capture Hungarian consumers' relationship with attitude to and knowledge of agrobiotechnology. Two Eurobarometer surveys covered also Hungary [2002, 2005], several research programmes were conducted by Budapest Corvinus University, Department of Central Food Economics in cooperation with the research team of the Food Research Institute (KÉKI) (see Bánáti's studies). GfK Hungária and Nielsen Market Research Company did one or two short surveys, and companies interested in biotechnology also ordered some market research in Hungary, including an Aventis CropScience survey [2001-2002] of consumers and the Monsanto survey, focusing on farmers. In addition, the National Association of Consumer Protection also conducted a survey in 1998. The next table summarises the main features of research activities focusing on consumers, and accessible from public sources.⁵⁸

The "Main findings" row of the table contains different type and depth results, reflecting also some other characteristics of the reviewed research programmes. It shows, among others, that market researchers (primarily GfK and Nielsen) provide a quantitative description of the Hungarian adult population in terms of GMO knowledge and assessment [GfK Piackutató, 2002, Nielsen, 2010].

⁵⁸Apart from the research programmes shown in the table and own research, in the previous year two focus group study series also aimed at consumers in terms of GMO (the studies were conducted by Lilla Vicsek, Budapest Corvinus University Institute of Sociology and Social Policy and by Gyula Kasza at the Department of Food Economics), but the researchers had not published those analyses by the time this paper was completed.

Research	Knowledge and Attitude Regarding GMOs	Attitude toward GM food	Europeans and Biotechnology: Patterns and Trends	Risk perception related to GM-food	Consumer trust and food safety
Research organisation	D&T Marketing	GfK Market Research institute	Eurobarometer	Corvinus University of Bp and KÉKI	Nielsen
Year	2000, 2001	2002	2005	2001, 2006, 2008	2009
Research method	focus groups + telephone survey	questionnaire	survey based on interview questionnaire	questionnaire based survey	online survey
No. of persons	40 + 200	1000	1000	961, 890, 1577	n.a.
Other characteristics	market research on behalf of Aventis CropScience	, statistically representative to Hungarian population	international survey on behalf of Europ. Commission	a new round of survey is ongoing	Global market research in 54 countries 30,5 ezer internet user participants
Major outcomes	 While process of gene- technology is perceived negatively, the outcome (GM plants, food) attracts more acceptance and willingness to try Ultimate goal behind GMOs is seen as: profit, increase in saleability and ecological/health reasons 	 2/3 of Hungarians are familiar with genetic engeneering Negative attitude is stronger in case of above 50 years lower income groups lower level of education. 	 70 % knows gene- technology, this level is somewhat below the EU average 77 % opposes GM-food willingness to purchase is mixed, 45 % would buy no GM-food at all even if it has obvious and clear advantages 	 Consumers are not knowledgeable enough in GMOs: ignorance, misunderstanding Mostly negative aspects are presumed: suspicion, mistrust Consequences of gene technology are not foreseeable 	According to 9 % it is completeley safe to eat GM food 64 % percieves G M food risky élelmiszert 58 % bekieves Hungarian food is safer than average

Table 14 Research ont he relationship of consumers and GMO in Hungary

Forrás: D&T [2000, 2001], GfK Piackutató Intézet [2002], Gaskell et al. [2006], Kasza [2009], Nielsen [2010] alapján saját szerkesztés

Those surveys did not attempt to describe the factors and correlations of consumer attitude (at least according to publicly accessible research publications). However, D&T Marketing made an attempt to do so in its focus group studies [D&T, 2001], and, to a certain extent Eurobarometer also covered the same topic [2005]. The consumer attitude to GMO is covered most extensively and in a most complex manner by the studies of BCU Department of Food Economics as their studies covered not only the traditional and usual topics within that scope (potential purchase, knowledge of genetic modification, etc.), but also issues relating to the relevance in time of the research (e.g., credibility of the interviewees talking about GMO).

All Hungarian researchers reported a considerable negative attitude. GfK measured negative attitude in two-thirds of the adult population [2002] aware of the concept of the genetic manipulation. D&T revealed some duality concerning genetic modification [2001]: while gene technology is clearly assessed negatively (the word itself was also regularly changed by the participants to genetic manipulation) several respondents would be willing to try the outcome of the process, i.e. the genetically modified product. According to the Eurobarometer more than three-quarters of the Hungarian consumers reject the genetically modified food products [Gaskell et al., 2006], according to the Nielsen survey [2010] nearly two-thirds of the respondents did not consider the genetically modified food products safe. According to the BCU survey, the degree of rejection was rising. Between 2001 and 2008 the relatively small group of people with strongly positive thoughts about GMO food products dropped by more than 50% (from 4% to 1.86%), while the group with a strong negative attitude more than doubled (increased from 15% to 31%). In total, the BCU researchers [Kasza, 2009, Kasza and Lakner, 2012] detected 62% rejection and 4.2% acceptance in 2008. Based on those data, as well as the activities of NGO-s, actively arguing about genetic modification, media news, etc., the finding of the D&T research was interesting, according to which consumers in small towns seemed most resistant, although there was no "combative resistance" (Pádár, 2002). According to the conclusion, "there is no clear rejection against food products prepared for genetically modified plants, and "consumers are convincible" [D&T, 2001:14].

I will summarise the Hungarian research activities according to the types discussed in my legitimacy paper (pragmatic, moral, cognitive, socio-political). For a chronological and detailed review of the research activities, see Pataki-Matolay [2008].

The testing, purchasing and judging of usefulness of GMO food products is an issue relating to pragmatic legitimacy. Apart from what is stated in the chapter, the following should also be noted:

D&T reported [2000] a great deal of willingness to test tinned products, frozen vegetables, sauces and other raw materials produced from genetically modified plants and "even those who are absolutely against genetic modification as a process would be willing to taste and try those products" [D&T, 2000:17]. All respondents would taste the products before they decided to buy them: they would like to make sure that the food products are tasty. On that basis D&T assumes that according to consumers "although the genetically modified plants and food products made from them are nice and attractive, and they are also big, they have no taste at all, or an unpleasant one at best, or they are different" [D&T, 2000:18]. Slightly more than 50% of the respondents would be willing to taste GM food products, 25% would definitely not taste them, and another 21% would also refuse [D&T, 2001: 10].

Looking at the attitude of Hungarian consumers in an international comparison, according to the 2005 Eurobarometer survey the attitude of the Polish and Lithuanian consumers was most comparable to the attitude of Hungarian consumers, i.e. slightly less than 25% of them supported GM food products, and 70% were against them. The consumers of the other then EU Member States rejected the GM food products in an even higher% age (most rejection was observed in Luxembourg and Greece, where only slightly more than 10% of the consumers were receptive). In 12 then Member States the rejection was lower than in Hungary (the lowest was in the Czech Republic with 54%). It should be noted that on EU average the support is not much greater than the support available in Hungary: only 27%. The Eurobarometer authors specifically highlighted that in Spain, where genetically modified plants are grown on tens of thousands of hectares, the support was only 7% age points higher than the low EU average [Gaskell et al., 2006:19]⁵⁹.

The research projects, which included an advantage for consumers in the question showed an increase in the willingness to test such products, although rejection

⁵⁹ For the comparison of a former Eurobarometer biotechnology survey (1996) and the early Hungarian research results see Bánáti et al. [2003] and Lakner et al. [2003].

continued to dominate. Kasza [2009] showed that if consumers were offered a genetically modified version of their favourite fruit, then 15.5% of the respondents would purchase it if the GM fruit was of better quality than the fruit without any GMO and further 11.3% would choose them if the price of the GM fruit were lower.

Eurobarometer tested the consumers' willingness to buy GM food products by asking respondents about the following five statements: "I would buy genetically modified food products, if they were healthier; if they contained less pesticide residue than other food products; if they were produced in a more environmentally friendly than other food products, if they were approved and licensed by an adequate authority; if they were cheaper than other food products." Nearly 45% of the Hungarian respondents answered 'no' to all five statements, and the rest felt that on average 3-3.5 statements could influence their consumer decisions [Gaskell et al., 2006:22-23].

By referring also to environmentally friendly production apart from the advantages in terms of price and health, i.e. benefits available for individuals and components of pragmatic legitimacy, that latter component of the study leads into the territory of moral (primarily principles and set of values) legitimacy and cognitive (primarily knowledge) legitimacy.

The concept that gene technology as "intervention into the nature", which "cannot be done without being punished for it, and that it will definitely backfire some time in the future" [D&T, 2000:14] is reflected already in the first Hungarian research. Respondents also expressed that although they were not afraid, but as genetic modification and the support thereof by purchasing such goods were against their principles, they would not buy such products [D&T, 2001:10].

Among the basic arguments for and against GMO, the respondents of the BCU-KÉKI research accepted mostly that argument (4.34 average on a scale of 5), according to which "by changing the gene set nature also changes and we cannot foresee the consequences" [Lakner et al., 2003:129]. It is followed by two arguments, stating the negative aspects of gene technology (people intervene in the matters of the Creator and genetic modification could also be harmful to consumers' health) with and average of 3.6. (The arguments for the advantages of genetic modification (increasing yield, based on which starvation can be eliminated, product quality improved) showed relatively lower, on average 2.8-2.9 acceptance ratio.) [Lakner et al., 2003]

The main topic of cognitive legitimacy is knowledge, a permanent issue of consumer research - 70% of the Hungarian respondents said that they understood what

genetically modified food products meant; that ratio was somewhat lower than the EU average (10% age points). However, the same ratio varied on a rather wide scale in the EU25 countries between 52% (Lithuania) and 92% (United Kingdom) [Gaskell et al., 2006].

In the research conducted in 2000 all participants were aware of genetic modification, although the marketing researcher conducting the research described the knowledge of the respondents as "in terms of genetic modification consumers had only bits of information and beliefs and wrong understanding derived from it" [D&T, 2000:12]. Based on the negative attitude towards genetic modification and inadequate knowledge, the researcher concluded that: "... genetic modification and the consequential positive environmental impacts and healthy plants are not yet associated with healthy nutrition or environmentally friendly activities in the minds of consumers [D&T, 2000:12].

One of the main messages of the BCU-KÉKI reports is that although the Hungarian consumer has already heard of genetic modification, they were not wellinformed, "they did not understand enough the results of genetic technology..., assumed construed or actual negative aspects and were mostly suspicious about genetic modification" [Lakner et al., 2003:129]. "Many consumers had no understanding whatsoever of biotechnology, two-thirds thought that ecologic production, its Hungarian equivalent being *bio-production*, was part of biotechnology. Only 55% of the respondents knew that biotechnology and genetic modification were similar concepts" [Bánáti and Lakner, quoted by Bánáti, 2008:442]. Consumers are becoming increasingly aware, yet they lack familiarity with molecular biology [Bánáti, 2005 and 2007].

D&T highlights the importance of information provision as numerous consumer researchers also do: reservations can be dissolved by information/communication, for which it suggests to the client company using arguments to which people "are receptive", which people "would like to hear". They summarise such arguments as attractive and convincing; arguments that stress the safety of the procedure and the fact that it is harmless to people and the environment; arguments that focus on the aspect of health and "explain that GMO is not about chemicals or preservatives"; arguments describing that genetic modification "will not cause any damage, illness or alterations in future either", arguments that focus on the "positive impact" on health [D&T, 2000:19];

and outline the development and history of genetic technology "in order to certify the past" [D&T, 2001:4].

One of the main topics of knowledge and information in international literature and Hungarian research is *labelling*. According to the BCU-KÉKI survey, 90% of the respondents think that if the product contains any genetically modified component, it must be listed on the label as consumer information [Bánáti, 2008]. The D&T survey also reflected an express wish of the consumers to include on the packaging of the product, if it was produced from a genetically modified plant, and that consumers should be able to make a choice accordingly [D&T, 2001:10].

Another aspect of Hungarian research, summarised here last, leads us to the concept of credibility and trust, with regard to parties engaged in biotechnology, information providers and decision-makers of agro-biotechnology. As we shall see, this rather complex approach contains knowledge and moral components, yet based on the dimension of institutionalisation it also points towards the socio-political aspect of legitimacy.

The D&T respondents considered genetic modification as a biotechnological procedure, a procedure, more scientific than plant breeding on the turn of the millennium, although the scientific approach was plagued by doubt concerning the short history of the science of genetic modification, "... it has no history. It is a completely new thing, and even researchers do not know what to expect" [D&T, 2000:14].

Through its questions concerning decision-making, Eurobarometer inquired about how (by scientific experts or the general public) and based on what principles (scientific evidence or moral considerations) should biotechnology be managed and decisions made. Compared to other EU Member States, among the Hungarian and Lithuanian respondents the largest group (72%) would manage that discipline based on expert proposals and scientifically proven benefits and risks. Another 13% would also entrust scientific experts with that task, yet would give preference to moral considerations. The rest of the respondents (14%) thought that instead of experts the citizens and the general public should be in charge of biotechnology, and according to the majority of them (10%) decisions should be made on the basis of moral arguments (Gaskell et al., 2006, p. 45).

In the same research Hungarian respondents had strong confidence in university researchers, as more than 90% chose that answer and 80% also had confidence in researchers working in biotechnology. Slightly fewer Hungarian respondents had

confidence in the industry: 75% responded to the question with an affirmative answer. 83% of the respondents had confidence in government regulations, and 89% had confidence in the EU regulations on biotechnology [Gaskell et al., 2006:51].

Bánáti and Lakner [2003] also highlighted the credibility of the representatives of science. In their research they analysed how much consumers would trust a particular source of information, if it stated that a particular food product was safe or risky. According to the results, although there is some difference as to whether a product is safe or risky, it still did not change the order of credibility of the sources of information. On the scale of 1 (would not believe it at all) - to 5 (would believe it completely) scientists clearly ranked highest among the assessed sources of information. Researchers and experts were stated in the first three places of the 24 listed sources of information (unfortunately the authors did not specify the reasons why they selected those sources in the research. At this point it is important to note a lesson from the D&T research, according to which although in their responses consumers referred to the resisting ability of plants and environmentally friendly activities, they thought that genetic modification was driven primarily "by money/profit", and "was aimed at increasing sales", i.e. in their opinion the main drivers are economic factors [D&T, 2000:16].

7.2. Focus group discussions

In the course of the recruitment, the classic pattern was followed in that four groups suitable for cross-control, and homogenous in terms of education and well-informedness were created (see e.g. Oblath [2007]). The subjects were recruited through a recruitment firm, and the membership was finalised through a screening questionnaire. Screening questionnaires used in quantitative research projects are applied in order to structure and simplify the recruitment process, and minimise the paperwork. There is practically no statistical processing on the basis of and along the demographical data of the screening questionnaire [Oblath, 2007]. The characteristics of the group members must of course be taken into account during the analysis – similarly to further contextual features [Vicsek, 2006/7].

Participants of average income and with Budapest residence were expected. The objective was to compose mixed groups from the gender as well as the age group point of view (younger age group, middle aged). Further, it was considered important to

involve in the discussion persons who were active decision makers, and participants in shopping food for the family / household, and media consumers at the same time (watching at least one newsreel almost each day, and reading some printed daily and a weekly political-economic medium with relative regularity), i.e. featuring a certain level of well-informedness – even including developments in the GMO topic – through the mass media. A distinction was made based on participants' education among the members of the 2006 and the 2010 focus group: in both years a group with higher education decree, and one with secondary education was formed [Knodel, 1993] so the "fault line" feature was education. All in all, relatively heterogeneous groups were formed, segmented along one aspect, namely education. It should be noted at the same time that since small groups were used, they could provide only limited conclusions along the fault line feature .

Professional recruiters were hired each time, a different one in 2006 and 2010. The reason behind hiring another company was not to replace the first one by all means, despite the mistakes the first company committed in the recruitment process (missing most of their deadlines, invitation of black-listed candidate, keeping ratios to achieve heterogeneous group membership The primary reason was that in 2010 I wanted to act as moderator, while the first company offered their services in a package including preparation and moderation.

The literature of focus group discussions discusses at great length the activity of the moderator, i.e. the key actor familiar with the subject of the research and group work. The role of the moderator, and his tasks, possible types of behaviour are discussed in detail (see e.g. Letenyei, 2005; Síklaki, 2006), as well as aspects applicable to the choice of the moderator, the essential features of the moderator, and their relation to the research objectives (see e.g. Fern, 2001). And these discussions are not only about different moderator styles suitable for research of different types, content, and participants, but even about the "ideal" personality traits of the moderator. Most articles are in support of the researcher assuming the moderator's role in a focus group discussion, supposing the required competence, but some papers on methodology raise a cautious suggestion warning that financial limitations should not force the researcher into the moderator seat.

Attempting to present the guideline it is worthwhile recalling the screening questionnaire, and pointing out that it did not use the words *biotechnology, genetically modified food*, or other terms referring to GMO, but invited participants to a discussion

of food production and consumption. There were several reasons to this. We wanted to avoid attracting on board participants specifically interested in the subject or committed in any extreme direction, and also wanted to minimise a chance of participants to prepare for the discussion. We found it important to see for ourselves whether the subject of GMO would surface spontaneously in a discussion in Hungary about food products. (As it happens, in two groups it did, almost immediately, but in two other groups it did not.) Thus these so-called keywords or call-words had to be avoided by the moderator herself for a long time in the conversation.

I preferred the *standardised way* [Morgan, 1996] to the *emergent research strategy*, i.e. I followed the same guideline structure in each group. It gave me an opportunity of comparing focus groups, while at the same time – as Oblath puts it [2007] – all focus groups would be hard hit by any possible error in building up the guideline. In the present case, too, standard logic suited best the purpose of the research as the regularly changing focus group being built up from scratch is much more typically used for basic research or, with consumer research projects, e.g. to test promotion campaigns.

There were changes in the guideline – if only due to the long time passing and the replacement of the moderator –, but these were minor changes, not disabling a comparison of focus groups (e.g. leaving out a question that proved not to work in previous focus groups, or handing out a printed version of some text to be evaluated by participants instead of simply reading it out for them).

In the guideline we applied the funnel technique [Vicsek, 2007, Oblath, 2007]. We moved from more neutral, general questions toward more specific, and more sensitive subjects. This is what happened in the ordering of subject blocks, and with questions within them. The advantage of applying the sieve technique – apart from the fact that more general questions encourage group members – is that it helps minimise the effect that questions have on one another.

What was intended to be uncovered in two focus groups on the two occasions was what were the sources and who were the actors among those making statements about agricultural biotechnology that shaped the GMO knowledge and information of consumers. Whose voice and arguments in the organisational field reaches them and what can be the sources of their own opinion? What messages do they consider authentic? What arguments of other groups concerned do consumers' GMO-related

arguments show resemblance to? What makes consumers consider foods – including genetically modified produce and products – legitimate?

Focus group sessions began by discussing changes perceived in food manufacturing in recent decades – as a broad introductory subject consistent with the funnel technique –, whereby biotechnology emerged spontaneously in half of the groups. Its appearance is therefore a change that a part of consumers have taken notice of. It is to be noted at this point that the concept of "complaint culture" keeps emerging in the analysis of domestic focus group discussions (see e.g. Vicsek [2006]), i.e. adverse and negative tendencies and opinions dominate and discussions are characterised by an overall negative mood, which should be taken into consideration in evaluating results. Having said that, it should be emphasised that in discussing changes concerning food, the participants predominantly focused on losses (in terms of quality, taste, and the transparency of the actual characteristics and contents of the products) in their reasoning, while on the positive side they basically mentioned a wider assortment and availability.

Associations. It has been clearly and predominantly concluded from international and domestic consumer surveys that most European and Hungarian consumers reject agricultural biotechnology. Domestic consumers are particularly dismissive of agricultural GM products even in the European context, and make clearly negative associations with such products (see the chapter on domestic consumer surveys). In respect of associations, verbal associations made with genetically modified food in the four focus group discussions were as follows:

Associations	Category
I am scared of it, they look good, but because of what?; they are hazardous; the long term effects are unknown; what if it is like DDT?	risk
unhealthy; detrimental to health; diarrhoea; Contergan	health risks
unstoppable; irreversible	the future
refraining; distrust	consumer attitudes
mass produced; uniform; global production; scam; not real, but the dimmed down, version of the original; simplified and much more complex at the same time	the quality of the product
unnatural; interference with nature;	the production
infects the environment;	process

Table 15 Consumer associations with the term "genetically modified food"

"GMO means deception" is a point heavily emphasised. GM plants look like the most gorgeous traditional food (vegetables or fruits) and may even be cheaper. But they are not real and do not have the same taste, nutritional characteristics, and risk factors etc. Even though they are attractive, they do not meet consumers' expectations either explicitly (as the consumer perceives their different taste) or implicitly (whereby the consumer does not perceive, or associate with the products, risk factors or negative characteristics even consuming them regularly). By all that they contribute to what already characterises the supply of foodstuffs (wider assortment, better availability e.g. of exotic foods, but loss of quality, product safety, permanence, traditional flavours and seasonality). And because GMOs are actually a scam, manufacturers have no interest in providing information and thus it is no surprise that consumers know so little about this technology and the products it generates – that is the way the subject of knowledge and information comes up in focus groups. This can be interpreted as denial - "my ignorance should not be blamed on me, but on the manufacturer". By contrast, however, what more markedly emerged in focus groups was the fact that the consumer, deprived of knowledge of the product due to the way it is manufactured, is forced into a new territory where the burden of obtaining information is again placed on the consumer by the manufacturer. It is a kind of caveat emptor - let the buyer beware [Boda and Radácsi, 1997] - corporate attitude in the consumers' eyes, whereby if consumers want to have information about this aspect of the product, they are free to gratify that desire and exercise that right – let them find out about it themselves.

This leads us to at least two further consumer themes, namely the issues of consumer knowledge and consumer attitude.

Knowledge. In 2006, both focus groups revealed that the participants had an understanding of genetic engineering and some of them had more than elementary knowledge and were able to share information about toxins produced by GM plants or even knew about what was a fresh development in Hungary at the time of the focus groups, namely the moratorium on GM crops. It was the experience from the two focus groups that the consumers were relatively well-informed and that they obtained their knowledge from the printed and electronic media including environmentalist websites, economic weekly periodicals, nature films and many other sources. The participants shared their opinion along rather detailed and subtle arguments. Four years later the members of the focus group proved much less well-informed about agricultural biotechnology and its implications. These focus groups actually confirmed a lack a

scientific knowledge. The overwhelming majority of participants did not have even a rudimentary knowledge of either the technology and products or genetics.

Many of the surveys analysing consumer knowledge and attitudes have found that the main reason for resistance and resentment toward genetic engineering is the lack of knowledge about genetic engineering and biotechnology, i.e. consumer ignorance. These research findings seem to support what is known as the deficit model, which emerged in the 1980s and was applied not only to biotechnology but also to other scientific innovations and procedures, and according to which the lack of scientific knowledge results in an absence of supportive behaviour among consumers [Siipi and Ahteensuu, 2011]. The lesson drawn from studies scrutinising the connection between negative attitudes and ignorance is that consumers must be educated, which will reduce resistance to the unknown. What is needed is a kind of "therapy" – as termed by Sherry Arnstein [1979] – to address the problem of ignorance, i.e. an information treatment that cures consumers of the disease of ignorance. This argument lies behind not only researchers' recommendations related to communicating scientific results in a manner to persuade consumers, but also the biotech companies' intention to bring scientists to the fore as communicators of the subject of GM who, as authentic and knowledgeable experts, are able to explain science in simple non-technical terms and thereby succeed in overcoming consumer resistance.

In analysing interviews with a wide range of stakeholders, documents and public statements and as part of participative observation, Marris et al. [2002] draw a picture of how GMO decision-makers (regulatory authorities, governmental and scientific agencies, biotech firms, food manufacturers and trading companies) view the public and consumers in five European countries (France, Germany, Italy, Spain and the UK). Even if this image formed of the consumer can presumably not be generalised for all employees of all the institutions listed, according to the authors they are myths – "regarded as self-evident and not requiring even empirical evidence" [p.75] – that prevail among stakeholders. They are called myths since they – like tales and legends – serve to create and reinforce a common belief system and culture among strategic and policy decision-makers. Also, they are myths since they have made their way into common parlance without being called into question often in the form anecdotes [Marris et al., 2002].

Marris and al. [2002] use – in evaluating Hungarian surveys and also as frequently referred to at conferences – the tomato story to illustrate one of the ten myths

they have identified and want to dispel through the findings drawn from their focus groups, namely the myth of consumer ignorance. The tomato story dates back to the 1999 Eurobarometer survey, in which the scientific knowledge of consumers was tested by a series of true or false statements including this one: "Regular tomatoes do not contain any genes, while genetically modified ones do." 35% of European respondents gave the right answer to this question, i.e. marked "false" in answer to this statement; 35% marked the wrong answer; and 30% answered "I do not know" as an option [INRA, 2000]. In total, two thirds of consumers answered incorrectly, a fact used ever since as evidence of consumers' ignorance of even the rudiments of genetics. True, it is a surprisingly high rate in the case of this basically simple question, but if the consumer is judged on that basis, it is tantamount to saying that scientific knowledge assessable by the use of these types of questions would be necessary to enable the general public to have a clear understanding of genetic engineering [Marris et al., 2002].

In other words, the myth of ignorance means that public political, scientific and business decision-makers claim that consumers do not have the necessary scientific knowledge and their mentality is determined by misconceptions and false beliefs created by sensational media and/or earlier negative events, which is what lies behind their attitude toward genetic engineering. The implication of the myth of ignorance is that since the consumer is in a state of ignorance, he is not apt to be engaged in meaningful dialogue [Marris et al., 2002].

Challenging this myth and the logic of the deficit model, several studies point out that it is not consumers' knowledge or ignorance that reliably predicts their attitude to GMOs [Bonfadelli et al., 2002, Horlick-Jones et al., 2007]. The data of the aforementioned Eurobarometer survey certainly do not support the deficit model in that Gaskell et al. [1999] did not find a linear correlation in this direction between attitudes and the level of knowledge in their analysis of the database. A similar conclusion may be drawn, albeit cautiously, from the focus group discussions of the current research: Understanding of gene technology varied by group, while the attitude to GM food was similarly hostile in all groups. The issue of knowledge/ignorance and scientific knowledge will be revisited in the form of a summary after the presentation of the results of researchers' media debates and interviews with stakeholders, while below, by channelling experience from focus groups, a link is made to consumer knowledge through the following points:

- Scientific knowledge. Can consumers be expected to have scientific knowledge in the field of biotechnology? With this question I do not even intend to raise the issue of scientific knowledge being accompanied by a great degree of scientific ignorance, i.e. that the holders of scientific knowledge are faced by "unknown unknowns" [Wynne,] themselves. At the core of this idea lies the fact that there are some other food industrial and food safety developments that prove to be too complicated and complex to be understood by consumers and only experts can make sense of them (see for instance food additives and preservatives). In their case while not overlooking the importance of consumer knowledge; rather, we tend to admit that there is an information asymmetry between the individual consumer and industrialised food manufacturers.
- *Reflected ignorance.* Will the gap in scientific knowledge be ultimately filled by consumers' false beliefs making meaningful dialogue impossible, as is suggested by the myth of ignorance? Based on their focus groups, Marris et al. [2002] concluded that false beliefs are not typical and that consumers admit their ignorance themselves, i.e. they are cognisant of their own knowledge and cognitive status. This latter fact also invariably characterised the focus group discussions of this research project the participants had an almost painful awareness of it. Painful, because it revealed a lack of control, since without knowledge they were not able to make informed decisions; painful, because they were confronted by their lack of understanding of yet another aspect of foodstuffs; and painful, because the media and authorities supposed to be sources of information did not provide satisfactory information.
- Heuristic knowledge. While not possessing scientific facts, consumers do have plausible knowledge resulting in legitimate beliefs, attitudes and actions [Marris et al., 2002]. These include, among other things, experience related to food consumption and also the surrounding institutional system. They are able to make judgements based on tastes and rely on their memories, personal knowledge, shopping disappointments and satisfaction. They also have experience with the functioning of the institutional system, confidence or mistrust in large corporations and other actors of science and the institutional system. This heuristic knowledge influences the acceptance of agricultural biotechnology [Marris et al, 2002].

Based on all that, demanding scientific knowledge creates a kind of power position whereby consumer arguments are rendered ineffective and delegitimised

Risks. Health effects, regulation (inspection, labelling) and lack of trust (in the institutional system) turned out to be the central topics of discussion in the focus groups. Furthermore, the taste of foodstuffs was also a regular topic in every focus group in the form of some kind of "taste nostalgia". In one group this had finally become a point of reference to which they anchored their further arguments, interpreting almost every explanation they provided in the context of loss/preservation of flavours. I identified a similar structure overarching almost every topic in one more group: In one of the groups of 2010, the Hungarian focus (produce, product, production, institutional system, media etc.) acquired central role as a qualifying attribute, especially to express the advantages of local foodstuffs and consumption habits (basically in opposition to the United States), followed, probably to mitigate and caricature that, by the search for the already lost "Hungarian idyll" as a hindrance to development.

The majority of consumer opinions on genetically modified foodstuffs concerned their health effects. This topos emerged in every focus group spontaneously and quite forcefully (in a categorical form, with strong attributes). Typically, all participant joined in at some point in its discussion; in this sense, this was the aspect triggering reactions most intensively: no other topos was discussed by the groups as extensively, with the contribution of every member. At the same time, this was also the topos subject to the most widespread agreement of the group members, but it was also the one where their opinions were the most polarised.

The above – except maybe for the last, apparently contradictory, statement – is not surprising. The participants' concerns in regard of foodstuffs are embodied and manifest themselves most clearly along the relevant health implications, risks and expectations. In several groups, the attribute of 'healthy' was discussed as the No1 feature of "good food", at one place in connection with the evaluation of the negative changes related to foodstuffs:

"Moderator: If you review the changes in foodstuffs, what is there on the losses side?

1I, 1M, 1A: Our health (they echo one another)"

The participants have also named specific health hazards in connection with genetically modified food (it may cause allergy, irregularity in the intestines), and even mentioned some extreme consequences to underplay these risks: "we'll grow a third

foot, a fourth head". Potential effects on the human DNA were listed the most frequently ("they might stimulate also our genes", "how will out genes be modified?", "they may cause errors, distortion also in the human species"", "what I am concerned about is the alteration of the transmission materials. Who knows in how many generations' time that would appear?"). It was mentioned in a single case only that a more restrained use of chemicals might be an advantage from the health care point of view, and another positive effect was also mentioned once, but even then with a negative overtone: "it filters out diseases, but generates new ones". It has also occurred that "you would have to eat an enormous quantity, hundreds of kilos for them to stimulate changes in the organism", albeit "since the utility animals also eat genetically modified crops, accumulation seems likely" in the human organism. In the same group, this argumentation going into the technical details was finally terminated by a participant by a rather common argument, namely that the risk implied by genetically modified food probably "does not even come near that of the pudding", the "colouring of which is probably a take-all".

The above quotation confirms that consumers do not demand zero risk, despite the fact that industrial actors and researchers often attribute them this illusion as an assumption. "Certain things you cannot avoid" – this is how one participant put it.

At the same time, in the arguments of the participants, the health risks implied by genetically modified foodstuffs generally blend into the health risks associated with agricultural mass production and the products of the food industry. The consumer has no insight into and no knowledge of the way in which processed food is manufactured; what he does perceive is first of all the outside appearance (bigger and more uniform size) and the change in taste. The basic assumption is that these crops and food products are artificial, they are produced in an artificial way and no one knows in what way, through what alterations (technology), and from what basic and auxiliary materials.

Since agricultural biotechnology and agricultural mass production and food production in general are not distinguished sharply in the perception of the consumers, the existence, the pragmatic legitimation of the latter (we consume their products) and their cognitive legitimation are projected also on biotechnology. Although the participants voted in favour of not buying, of avoiding GMO food altogether – that is, the majority expressed a de-legitimising opinion at the pragmatic level of legitimation –, upon questioning they specified consumer groups for whom GM food might be attractive or at least consumable or which should consume them (people in areas hit by famine or persons in particular health conditions). It was mentioned in every group that we probably already consume genetically modified crops without being aware of it, and it was also expressed that their appearance and cultivation is a process "we cannot stop", in which "we have no say". That is, if asked how competent they feel in this issue individually, how much they can influence the relevant decisions, they will adopt a fatalist standpoint: it is possible to access products originating from known, reliable sources in the form of individual "partisan" action or to adopt "flight strategies" ("pick your own" offers, milk vendors), but these have a marginal share in the consumption of everyday people. Thus the consumer purchases the products of industrialised agriculture and food manufacture, and since he regards genetic engineering and its risks as part of the food processing trend and sees no chance to alter that, genetic engineering has already been given cognitive legitimacy; its cognitive legitimacy has been established.

However imposing this logical exposition may seem, one must not forget about the consumer discussions on regulation and in particular the fact that they welcome the moratorium on GMO crops and wish it would be maintained as long as possible, and stress the necessity of labelling – both in order to be able to avoid genetically modified products.

Trust-Institutional setting. The participants expressed their lack of trust in every actor of the organisational field mentioned in the discussions. The focus group participants were asked to evaluate statements by decisive actors of the Hungarian "GMO case" (authority, company, researcher, NGO) without knowing which among them actually made the statement concerned. According to the results, the participants deemed the Ministry of Agriculture and Rural Development authentic, and they also assigned Greenpeace to the category of authentic sources – representing a potential defence line –, whereas they judged the utterances of the competent persons of Syngenta and Monsanto definitely unauthentic, and were of the opinion that the plant genetics researcher being quoted was clearly biased and interested in adopting a pro-GMO stance.

Although asked in their capacity of consumer, starting out from their food purchase/consumption habits, one group expressed "interference with the order of nature, not assessed sufficiently and hence having an unknown effect" as the primary problem. Several parallels were drawn with developments and innovations which turned out to be harmful or even fatal later on (DDT, Contergan), and it was also emphasised that disasters may occur even despite the extraordinarily strict and prudent protocol of pharmaceuticals developments. The pharmaceuticals products concerned have a relatively narrow circle of consumers; GMO "is worse: it strikes us all".

Consumer researches have pointed out also that personal values may exert a strong influence on the attitude to GM products – notably, typically, the value orientation that interprets GM plants and foodstuffs as undesirable interference with nature, as a vain attempt to acquire control over nature. The rejection of part of consumers and of public opinion relies on this value judgement.

The qualitative surveys of the opinions and attitudes of both domestic and European consumers show that, despite the pro-GMO arguments, they presume that the introduction of GMO products is driven by the underlying business interests, and they see no social benefit in the broader sense. Let's mention that the qualitative surveys indicate also that consumers do not evaluate GM products exclusively on the basis of their economic benefits to them or to others, but they also look for communal/social benefits, and their negative attitude intensifies when they see none. Contrary to the health care applications of biotechnology (which is equally not felt to be hazard-free), they associate the "achievements" of agrarian biotechnology clearly with the category of private profits and miss their social usefulness.

In summary, no single group, person or organisation can be identified whose legitimation or de-legitimation arguments are consciously shared by the consumers. Furthermore, they are not familiar either with the argumentation of any of those actors. Knowledge based on hearsay is partly unfounded, and consumers turn a deaf ear on the actions of the Greens which they regard as a rag even if they agree with the content. No company, scientist, organisation or argument is referred to specifically in a positive context, albeit such actors are mentioned with a negative connotation (as the driving forces behind the food industry which tends to acquire an increasingly industrial size and to bring about unfavourable developments). That is, the results of the focus group surveys do not support the corporate expectations that information supplied by authentic scholarly persons being put into the limelight would pave the way for GMO.

8. Legitimation lessons

In this final chapter I would like to come back to the legitimation tipology of Suchman [1995], the discursive strategy of Vaara et al. [2008], and the topic that proved to be central in all pillars of my empirical research: the question of knowledge ignorance, and by that – also related to the socio-political dimension – the democratization of technology and public participation.

Even though pragmatic legitimation of GMO seed is non-existent in Hungary due to the ban on GMOs, in the argumentation around these products one can come across with it. Not only this dimension, but the other two aspects involved in Suchman's typology proved to be appropriate in understanding and evaluating new products. An added level is need though. In harmony with the considerations of the institutional and the discursive approaches the socio-political dimension of legitimacy was highlighted here.

Figure 5 Argumentation and discursive strategies related to legitimacy





Source: Author's compilation

Several legitimation strategies have been explored in relation to the activities and discourses of the members of the organizational field – basically to the agbiotech corporations.

Argumentation discourses and narratives have been identified, by which relationship to the discursive strategies cited by Vaara et al. [2008] is going to be constructed now.

One lesson to be learned from the discursive approaches is that narrativization comprises the other discursive strategies applied for the sake of legitimation. It seems justified to assume that the socio-political dimension of legitimacy interweaves its pragmatic, moral and cognitive dimensions. Usefulness may grant pragmatic legitimacy. But what is it that makes something useful? Becoming useful, being labelled as useful depends to a large extent on the social medium ever, and it is again a power issue. The same can be said of legitimacy based on a value of some kind. Whose value? And whose values predominate in the given social medium? Moral legitimacy is also embedded in the power structures. And what seems natural, what goes without questioning, i.e. cognitive legitimacy (it is legitimate because I understand it, I know it, I see it as natural) is again far from being distinct from power. Whose knowledge, whose awareness will count, will be coded in the institutions and become natural? These questions suggest that neither can cognitive legitimacy be exempt from power.

As shown in each of Chapters 5-7, knowledge is a significant topos for every stakeholder group. The most prominent features emerging from the interviews are the following: doubts concerning the knowledge and competencies of policy-makers and of the competent ministry staff; superficial knowledge of laymen environmental and consumer protection activists – and, the most forceful one: correlation between the knowledge and results of researchers and their independent researcher status.

The analysis of the researchers' media debates supplied information on the debate concerning scientific knowledge. As we could see under the argumentation strategy of exclusion, the researchers assign each other to the categories of (scientifically) "acceptable" and "unacceptable" based on their opinions expressed on genetic modification and its current results. That is, not only laymen, policy-makers and civil actors fall into the extreme of "emotion without reason" in terms of the dichotomous distinction of emotion and knowledge but, in the last analysis, the researchers also exile themselves (i.e. the opposite party within the group of researchers) there. In doing so, they sort of confirm the consumers' (heuristic) knowledge that, in the final analysis, the scientists themselves are also characterised by ignorance or at least by the absence of such knowledge as would support the decision-

making of consumers by providing appropriate content. Consequently, it is unfair to blame anyone for lack of consumer knowledge.

However, the consumers who are really not in command of in-depth scientific knowledge are characterised by their lack of reflected knowledge, that is, they know what they do not know, i.e. what they would like to obtain information on to overcome their painful lack of knowledge. Furthermore, they are characterised by some kind of heuristic knowledge about the already quite complex foodstuffs and institutional system.

That is, the (diversity) of knowledge(s) is multiply challenged in this debate process about legitimation in terms of content, quality, source and legitimacy. The approach focuses almost unexceptionally on the hiatuses, that is, on whose knowledge is insufficient or irrelevant. The argumentation, the way in which the question is asked refers only in a most marginal way to the opposite, i.e. to what kind of knowledge and whose knowledge should be taken into account. The philosophical concept of postnormal science might be more useful for that purpose.

Post-normal science philosophy points beyond the scientific medium in the narrow sense – given the many kinds of values and stakeholders, the high level of uncertainty, the complexity and the large-scale effects; it conceives of the research of the area and ultimately the relevant decision-making in the framework of the so-called extended peer community, that is, in short, it assumes participation, and stakeholder involvement.

Although the stakeholders pronounced a positive judgement on social consultation experienced during authorisation and regulation-making, the tool kit and logic of participatory decision-making is quite different from that. To recall the participation ladder serving as the measure of stakeholder involvement [Arnstein, 1969, in Hungarian: see Matolay and Pataki, 2008], many stakeholder groups do not get higher than the lowermost step: manipulation and therapy are their fate. In the interpretation of Arnstein [1969], this means that decision-makers interpret the lack of knowledge of the stakeholders or their opinions deviating from the intent of the decision-maker as a mental problem of some kind that needs to be cured. That is, in line with the deficit model, the shortage of information and of knowledge which presumably triggers resistance and reluctance ought to be eliminated by (a posteriori) information supply. According to the logic of the participation ladder, it is imperative to keep

climbing higher, beyond even lack of participation and pseudo-participation, up to genuine participation of merit, active participation and partnership.

The public policy lesson of my research is related to the foregoing. Participatory decision-making techniques allow to provide for transparency; to channel stakeholder opinions and the complexity of various kinds of knowledge into decision-making.⁶⁰ The participatory tools applied in regard of agro-biotechnology are reviewed in Chapter 7; Levidow [2007] analyses the relevant European experiences and points out among other things that every European participatory biotechnology evaluation process reflected on the nature and limits of lay and expert knowledge, namely by interpreting the role of consumers and of citizens in general also as (lay) expert roles.⁶¹ Besides his classical example (the case of the Cumbrian shepherds with caesium released from Chernobyl [1996]), Wynne illustrates the necessity of lay wisdom and knowledge, of local knowledge, also by a biotechnological case. He quotes a dialogue with a scientific advisor of the British government -a researcher -at a hearing held by the British agrobiotechnological committee (Wynne [2002]). To the question whether it is rational for people to be concerned in connection with GM plants by the "unknown unknowns", the researcher answered that unless the questioning party specified what unknown he means, he cannot answer the question. And when the questioning party queried, in turn, whether in that case the researcher should not indicate in his advice given to the ministers that there may be certain "unknown unknowns" in health care that the researcher examines, targets, addresses, the answer was the following: 'No, as researchers, we must be more specific. We cannot do our work based on the em, kutatóként konkrétaknak kell lennünk. Nem végezhetjük a munkánkat valami lázas elme képzelődései alapján...' [p. 469].

Thus, inclusion and participation might be a pathway in the terrain of postnormal science toward socio-political questions and democratization of technology. To finish with I provide an overview of participatory techniques utilized with regard to GMOs. I also intrudce this in order to shed a (self)reflexive light on consumer research.

⁶⁰ For other benefits of stakeholder involvement and participatory decision-making, see Bela et al. [2003]; Matolay and Pataki [2008].

 $^{^{61}}$ The analysis of Levidow [2007] highlights also the drawbacks of the participatory processes which had taken place, e.g. that such tools can also ensure real accountability and process transparency if they are applied – apart from some other factors not to be discussed here – actually with the goal of the democratisation of technology (see e.g. Stirling [2005]). Instead, the previous processes set mixed – sometimes contradictory – objectives, and they were marked much more by the intentions of information supply/education based on the traditions of the deficit model; of surveying consumer attitudes; offsetting opinions deemed extreme etc.

Although I have presented the subjects of the research projects above in this same chapter, I wish to point out here that an apparent shift has been taking place in recent years: the consumer is now not only considered a buyer, and user of the product, but his other involvement, his presence as a citizen is also being considered, at least in terms of names. Regarding the applicable search word the phenomenon surfaces in several papers by choosing the nouns *public* and *stakeholder* to be their central concept besides or instead of *consumer*. (with the latter, in the present chapter the *consumer*, and the *citizen* only come up of course as stakeholder research projects). At the same time, in many instances the consumer, and public opinion continue to be strictly distinguished, while elsewhere the two are used in free variation. [see e.g. Costa-Font et al, 2008], or combined (*consuming public*) [Moses, 1999]. What I wish to introduce by this statement is that

- The majority of the research projects processed here has been criticised (specifically and/or in general) saying that this essentially *consumerist* focus is too narrow, and the *civic conception of public discourse* is missing. The point of departure of these research projects so the criticism continues is the assumption of the politically neutral, instrumentalist model of science and technology [Davison et al, 1997].
- There is another group of methods, which places both the issue and its actors in a political setting, while at the same time it wishes not (only) to conduct investigations, but is applied as a decision *preparing*, and more often as a decision *making* tool. The next table places these two investigative directions, the consumer's and the citizen's, alongside each other.

Participant	consumer, end-user, buyer,	citizen, community member,
viewed as	economic agent	political agent
Fundamental	to explore consumers' opinion,	to prepare decision- and policy-
aim	attitude, choice	making
	standard market research,	participatory techniques:
Methods	quantitative and qualitative	citizens' jury, consensus
applied	methods:	conference, constructive techn.
	poll, survey, focus group, etc.	assessment, deliberative poll
	Eurobarometer (EU, European	Consensus conf. on GM food
Typical	Commission, since 1991)	(DK, Teknologiradet, 1999)
examples	Consumerchoice (EU, European	Citizens' juries on GM plants
	Commission, 2006, 2007)	(UK, GM Nation, 2002)

Table 16. Consumer research and participation techniques

The final summary about my work is the following.

This thesis examines the legitimation and de-legitimation strategies applied by members of the Hungarian organisational field of agro-biotechnology in regard of genetically modified plants.First I reviewed and systemised the legitimacy interpretations of the various approaches of organisational theory. I processed the strategic, sociological institutional and discursive approaches, respectively, according to the same legitimacy typology, and I placed pragmatic, moral and cognitive legitimacy, respectively, in the context of socio-political legitimacy and concentration processes of the biotechnology community, as well as their association.

I processed the recent integration relationships, highlighting their legitimation aspects. The thesis builds upon the relevant domestic and international empirical researches, and it investigates in detail, aiming at exhaustive coverage, those concerning consumer judgements on genetically modified plants and foodstuffs.

The investigation of the pillars of my empirical research in the form of semistructured interviews, the analysis of researcher media debates and focus group discussions with consumers, based on a grounded theory and critical discourse analysis led to the following main conclusions: The legitimation strategies of multinational seed producers and plant protection product manufacturers are not uniform, although legitimation, which they hope to realise with the help of plant geneticist researchers, and which can be labelled as "legitimacy spill-over", is a common denominator present in all of them. As for the legitimation strategies identified in the relevant technical literature, they tend to combine them: the tactical elements of the strategies of conformity, compromise, avoidance, opposition and manipulation respectively, are present simultaneously.

Scientific vs. lay knowledge and the issue of expert competencies represent a central topic of the legitimation arguments. We cannot speak of participatory decision-making in the Hungarian legitimation processes, despite the fact that several stakeholder groups were represented in the preparation of the legislation which determines the agricultural presence of GMOs to a definite extent.

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Annex 1. Organisational field

The term itself is used by the followers of the school of institutional economics as well as the advocates of population ecology, albeit with different interpretations. The first theory applies it with a broader scope. As explained by DiMaggio and Powell [1983], it comprises every organisation which in their totality make up a perceived, noticeable, deliberately managed field of institutional life: the suppliers, the buyers, the authorities and the manufacturers of similar products all belong there. That is, the organisational field does not only gather together competing companies, as suggested by some communications of population ecology, nor does it mean the networks of interacting organisations portrayed in the inter-organisational network approach, but it concerns every relevant actor. Such fields are defined by their common cognitive and normative settings or by their common regulatory system. The term "field" refers to a community of organisations which operate in a common meaning system, and the members of which interact more frequently with each other than with actors outside their field. In the opinion of Scott, this produces a level where the institutional powers are definitely strong and effective [Scott, 1995].

The industry system of Hirsch and the societal system of Meyer and Scott [1992] are also constructed on such a system, and the sectoral approach of Räsänen and Whipp [1992] is even more akin to it. These authors see their respective constructs as a historical configuration of economic activities developing side by side, in close connection, in a complementary way; one that is often a set unit in terms of time as well as space. Their 'sector' definition hence corresponds to that of the institutional approach of the organisational field: it comprises all organisations with which the "primary" members of the sector maintain regular contacts and carry out transactions.

Sub-groups are also distinguished within the organisational fields – to outline certain structures or decisive components. Let me refer here to the approaches concerning the strategic groups and the competitive or primary competitive groups, respectively, among them. The term 'strategic group' is used to explain differences within a given industry. Hunt [1972] intends to highlight through this construct of his that although the companies concerned are the components of the same sector, there are clear differences between them which impact e.g. on decisions concerning entry to the industry [Porac, Thomas and Baden-Fuller, 1989]. Thus this delineation is meant to make clear any corporate strategic asymmetries that might be concealed at industry

level through the definition of relevant groups. The nature of the strategic groups as intermediate level between the company and the sector has been criticised in the meantime e.g. for being no more than an analytical abstraction made by the researchers, suitable for assessing inter-company similarities and differences only if the relevance of their strategies is disregarded, as those are taken into account in such analyses tangentially only. If we attempt to understand strategic interactions within a group of similar companies or between such groups, then the socio-psychological reality of the "group" must also be taken into account. To do so, however, researchers have to assess also the perceptions shared/proclaimed by the member organisations, and also the way in which those influence the development of their respective strategies [Porac, Thomas and Baden-Fuller, 1989].

The organisational field approach can be linked also to the so-called stakeholder map of stakeholder theory. A corporate stakeholder map compiled with adequate sensitivity and comprising every potential stakeholder and perhaps even their relationships with one another and with the given organisation provides a good point of departure for the exploration of an organisational field. It is an important proviso, of course, that the stakeholder map applies to a single organisation, whereas the membership of an organisational field may be different/broader. Nevertheless, there is an analogy since the group of stakeholders, at least of the external ones, with its rights, expectations and legitimate demands is a medium determining the external environment/structure and requiring adaptation to it.

Research subjects are				
mostly	(food-) consumers			
	citizens			
the her in a structure	neighbours, i.e. members of the local community in a GM producing			
also having other	area			
Involvements	members of consumer protection organisations			
	anti-GM militants			
	researchers (primarily those dealing with agricultural biotechnology in			
as opposed to	natural sciences), farmers, businessmen, environmentalists, local reps,			
	local decision makers.			
Research	h extends to the following technologies, and products			
essentially	genetically modified foodstuffs, genetically modified food ingredients,			
	and GM commercial plants			
based on gene	first generation gene modification			
modification of different	second generation gene modification			
generations	unspecified, no data available			
based on its existence	existing, properly produced, manufactured, or hypothetical, fictitious			
	produce or product			
	genetically modified food without further specification			
	genetically modified commercial plant, produce, vegetable e.g. apples,			
	bananas, broccoli, potatoes, kiwi, maize, tomatoes, rice, etc.			
in accordance with the	Genetically modified animal: e.g. salmon, chicken, cow			
detailedness of genetically	Farm animal fed with genetically modified feed, and food produced /			
modified food	processed therefrom: mutton, salmon, beef, cheese, milk, egg, butter			
	Food product containing genetically modified ingredients: chocolate,			
	biscuits, bread, maize, cornflakes, pasta / dough, vegetable oil (rape,			
	soy), tomato sauce, tofu, tortilla chips etc.			
as part of wider food	novel food			
categories	functional food			
	genetically unmodified foods, base materials, i.e. food free from gene			
	modification			
	more specifically: foods produced under ecological farming			
in comparison with	pharmaceuticals containing genetically modified ingredients, and			
	applying biotechnology, third generation plants, i.e. those yielding			
	medicine base products, all in all: medical gene technology			
	gene technology applied in human reproduction			
	genetically modified microorganisms			
	other new technology (information technology, nanotechnology, etc.)			

Annex 2. Methodological features of consumer research projects

Is the tonic of the research known to the subject in advance?					
is the topic of the research known to the subject in auvance:					
No, maximum in its wider	approach to technological innovation				
context	assuanty evaluation of developments in the food industry				
Vac characterisation	genetics is usually the topic indicated in advance				
Yes, characterisation,	already as early as the selection of the subjects of the research, or during				
evaluation of genetically	the prior screening				
in the framework of a kick-off experiment					
Research methodology					
Quantitative and qualitative research, and their combination					
	Personal, telephone, postal, or online surveying				
	Experimental auctions (WTA/WTP), role-repertory test – applying the				
By survey method	research, and evaluation techniques of environmental evaluation				
by survey memod	[[környezeti értékelés – lehet így?], and consumer behaviour				
	Focus group discussion				
	Deep, semi-structured, and laddering interviews				
Analytical method	Choice modelling				
	Effect diagram, network relations				
	Regression calculations, ordered logit model,				
	Research background				
Risk researchers	Consumer behaviour researchers Food researchers				
To w	hom are the researcher's conclusions addressed?				
	primarily concerning the rules of marking the genetically modified				
	content, i.e. <i>labelling</i> (voluntary/obligatory, above what GMO content,				
Regulatory authority	etc.)				
(national, EU,	consumer sovereignty, consumer rights, and their observance				
international)	risk analysis to be applied, methods of risk management and risk				
	communication				
companies producing					
genetically modified	the communication of the health risks of genetically modified foods				
sowing seed	the necessity of providing information				
companies producing	directly responding to consumers' assumptions concerns				
genetically modified food	ancerty responding to consumers' assumptions, concerns				
media	the communication of the health risks of genetically modified foods				
biotechnology researchers	In a manner circumscribed, but not specifically named:				
	Site / location of the research				
	Among others: Australia South Africa European Union United States				
focussed on one country, region, area	France Netherlands Canada Catalonia Hungary Great Britain				
	Germany Ireland New-Zealand				
comparative	o a Denmork/Sweden EU member countries EU USA				
comparative	e.g. Denmark/Sweden, EU member countries, EU-USA,				

Annex 3. Recruiting considerations

This table presents in a structured fashion the factors considered while deciding on the composition, and selecting the final membership of the groups. expresses the essential methodological considerations, professional / theoretical recommendations along aspects discussed in the methodological literature, and the main features of the focus groups arranged for the research on the basis of these.

Aspect	Major consideration, professional / theoretical recommendation	Research statistics			
Number of groups	Content: One more group would not uncover further major elements, or aspects, characteristics. Availability: Budget, infrastructural framework	2 groups in both 2006 and 2010			
Group size	The classical size is 6-10 or 8-12 persons, 8 participants on each but there are mini groups: triads and diads.				
Heterogeneity- homogeneity (ratio)	Homogenous group: A sense of cosiness to encourage communication (sex, age, status) Heterogeneous group: representatives of several / all perspectives are represented. External segmentation: Heterogeneity among the groups.	Groups of mixed sex and age, Budapest residents, homogeneity was ensured by the highest level of education within the group			
Representativeness	Usually the need for representativeness emerges with reference not to the entire population, but to the given group in the event of a problem involving a well- definable group (sociological research) or to the target group of a testable product, advertisement, etc. (market research).	Representativeness was not an objective; the opinion, and the process of opinion-forming of average food consumers was surveyed.			
Acquaintance	From a group dynamic point of view it is more advantageous if the group is homogenous from an acquaintance point of view, i.e. members are equally known or unknown to each other; selecting unknown members minimises the influence of relationships outside the group on the focus group.	Members were previously unknown to each other, and met for the first time in the focus group.			
Recruitment method	Several possible sources, and methods: Public database; database of the recruitment company, spontaneous street recruitment, snow-ball method, other.	Street recruitment			

Source: Author's compilation based on Letenyei [2005], Síklaki [2006], Vicsek [2007]

Participants	2006/1	2006/2	2010/1	2010/2
Number (persons)	8	8	8	8
Average age (year)	43	39.5	42.5	39
Youngest – oldest (year)	32-55	29-48	26-55	25-48
Sex $(m+f)$	5+3	4+4	4+4	6+2
Residence	Budapest	Budapest	Budapest and vicinity	Budapest
Highest educational achievement	secondary	tertiary	secondary	tertiary
Income situation	We manage	We manage	We manage	We manage
Primary shopping source	hypermarket market	varies	varies hypermarket	varies hypermarket market
Further locations	market	-	market farmers' [lower priced] shop	market
Involvement with	None, gardening	None	none	none
food industry,			Pick your own!	self-contained for
agriculture			fruit&veg garden	vegetables
	M1, TV2, RTL	M1	TV2, RTL	M1, TV2, RTL
Preferred news	DunaTV	TV2, RTL, CNN	M1, Echo, HírTv	HírTv, ATV
channel	-	DunaTV	ATV	CNN
	Hírtv, ATV	HírTv, ATV	DunaTV, CNN	BBC-News
	Népszava Magy.	Népszabadság	Magyar Hirlap	Magy. Nemzet
	Nemzet	Magy. Nemzet	Magy. Nemzet	Magyar Hirlap
Preferred economic and	HVG Népszabadság	HVG, Figyelő	HVG	HVG, Figyelő
political newspapers	168 óra	Magyar Hírlap	Figyelő	Népszabadság Népszava
	Magyar Hírlap		Népszabadság Népszava	-

Annex 4. Characteristics of focus group participants

Source: Screening questionnaires and focus group transcripts

Торіс	Venue, time
Consticulty modified foods	Great Britain, 1994; Norway, 1996; France, 1998;
	South Korea, 1998; Denmark, 1999; Switzerland,
Genetically mounted loods	1999; India, 2000; Japan, 2000; Argentina, 2000;
	Brazil, 2001; Belgium, 2003; United States, 2003
Gene technology in the food chain	Australia, 1999; Canada, 1999
Genetically modified plants	New Zealand, 1996 and 1999; Belgium, 2003
Biotechnology in plant protection	New Zealand, 1999
Trans-genetic, genetically modified animals	Denmark, 1992; Netherlands, 1993

Annex 5. Consensus conferences on gene technology

Source: author's own compilation based on Loka, 2011

The table surely does not contain each participation event [[részvételi esemény ?] on the subject including the GM Nation in the UK having copious references in technical literature despite the fact that in their multi-pillar process they even arranged for advisory sessions to citizens. In addition to the above, Birner and Alcaraz [2004] present the series of stakeholder dialogues called *Discourse on Green Genetic Technology* as a participation method aimed at consensus in Germany (2001), the debate on GM plants and free-land experiments in France (2002), and the stakeholder conference in the EU on life science and biotechnology strategy (2001).