Sustainable innovation in intensive animal husbandry: policy and public protests towards a mega-farm in the Netherlands

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Sustainable innovation in intensive animal husbandry; policy and public protests towards a mega-farm in the Netherlands

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Abstract: In this paper the planning and implementation of a specific mega-farm in the Netherlands is discussed, the so called 'New Mixed Business' (NMB). The central question is: how did communication, contestation and controversies play a role in the implementation of this innovative concept for sustainable animal production in the Netherlands? Theoretically, a qualitative discourse analysis was used by analyzing the views, opinions and images of the relevant private and public actors. The paper shows how communication strategies and contested discourses created obstacles and led to institutional blockages and a lock-in situation.

Keywords: sustainability, innovation, communication, contestation, animal production

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Innovation sustainable dans l'élevage animal intensif; politique et manifestations publiques envers une méga-ferme aux Pays-Bas

Résumé : Dans cet article nous examinerons la planification et la mise en œuvre d'une méga-ferme spécifique aux Pays-Bas appelée la «New Business Mixte» (NMB). Le problème central consiste à répondre à la question quel rôle jouent la communication, la contestation et les controverses dans la mise en œuvre de ce concept novateur pour la production animale sustainable aux Pays-Bas? Nous avons utilisé comme approche méthodologique l'analyse du discours qualitatif appliqué aux opinions et images des acteurs privés et publics concernés. Ce papier montre comment les stratégies de communication et des discours contestataires constituent des obstacles dans le processus de développement des NMB et conduisent à des blocages et situations d'impasse institutionnelle.

Mots-clés : durabilité, innovation, communication, contestation, élevage d'animaux

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Introduction

The past decades production in intensive animal husbandry in Europe has been the subject of rationalisation and modernisation. The productivity increased per ha, per man-hour as well as per kg of input. Intensification and industrialised and technological innovation have become core elements. (Rabbinge & Linneman, 2009). The downsides of this economically successful post-war agricultural development model are well known: environmental pollution, loss of landscape quality and biodiversity, problems with animal welfare, the extensive use of antibiotics, and loss of public confidence in food quality (Schiere & van Keulen, 1999; Marsden 2003; Wiskerke & Roep, 2007; Wallinga, 2009). The past decades intensive animal husbandry became 'decoupled' from the local environmental conditions that influenced farm production before (Van der Ploeg, 1992). As a consequence places of food production have become increasingly interchangeable (Wiskerke, 2009).

In the Netherlands, the process of agricultural modernisation resulted in a strong institutional regime, the 'Green Front'. The Green Front was an oligarchic 'Iron Triangle', where policy, research and extension services worked in unison and which strong influenced the development of agriculture and rural areas. For five decades, agriculture and rural development were almost synonymous. Parallel interests led to the situation that the agricultural sector in fact shaped rural policy and rural space.

The strong institutional position of the 'Green Front' gradually changed at the end of last century when an increasing environmental awareness, urbanisation, new societal demands and changes in societal value orientations were combined (Grin, 2010). Environmental problems like acidification, eutrophication and manure surpluses became manifest, while the growing scale of various rural functions (agriculture, water, housing, infrastructure) threatened the quality of valuable small-scale landscapes (Janssen, 2009). Specific landscapes, characteristic land uses and their particular flora and fauna disappeared, leading to friction between urbanisation and spatial quality. On the spatial level, the urban-rural dichotomy eroded in so called metropolitan landscapes, where urban and rural activities became increasingly intertwined.

A confrontation between perceptions of farming as an economic activity and societal values (for example on animal welfare) occurred. Environmental problems such as acidification, smell, animal diseases, food scandals and health risks, affected the image of farming negatively. During the outbreak of foot and mouth disease in 2001, 260.000 animals on 2500 farms were killed as a preventive measure. Citizens and farmers protested against the killing of non-vaccinated cows in the Netherlands.

In 2011 the zoonotic q-fever took 24 lives in the Netherlands, causing societal disturbance. Another public health issue regarded the antibiotic resistant MSRA bacteria. Farmers in intensive animal husbandry showed to be an extra high risk group. This forced hospitals to organise separated treatment facilities for those infected with the MSRA. In 2014 the possible public health effects of intensive animal husbandry were still under study.

These examples illustrate how the way of producing in the agricultural sector clashed with the public perception towards the countryside and animal welfare. The societal concern for animal welfare led to the founding of a new political party, the 'Animal Party', in Dutch Parliament and an integrative Animal Act, implemented on January 1st 2013.

Controversies towards the enlargement of scale in animal production in the Netherlands culminated in citizens protests against so called 'mega-farms'. In the province *Noord-Brabant* in the south of the Netherlands, 33.000 people protested in 2010. In response, the provincial government limited the size of new farms via planning regulation. Similar societal protests occurred in two other provinces. In 2010 a manifest entitled "Sustainable animal husbandry, putting an end to the organised irresponsibility" was signed by nearly 300 academic professors, 500 scientists and more than 200 interest groups.

In this paper the communication, contestation and controversies with regard to intensive animal husbandry are discussed based on a specific case-study in the Netherlands, the planning and development of a large firm for intensive chicken-

and pig meat production, the 'New Mixed Business' (NMB). This firm will be located in the municipality of *Horst aan de Maas* in the province of Limburg.

It is not merely a 'mega-farm'; entrepreneurs and governmental decision makers have framed this firm as one of the most environmentally sustainable and innovative examples of animal production in the Netherlands. At the same time, it is an exemplary case of societal protest against mega-farms in the Netherlands, in spite of its sustainability claims. The case illustrates how a contested concept via varied communication strategies and societal protests led to an institutional lock-in situation. The case is considered an extreme case. An extreme single case analysis can provide insight in the factors that explain the case dynamics (Yin, 2009).

The central question in this paper is: *How did communication, contestation and controversies play a role in the development of a claimed sustainable, animal husbandry firm in the Netherlands?* Communication is interpreted as the link between discourse and action, between discourse and institutions. We will show in this paper, based on the case of the NMB, that 'communication reflexes', contested notions on sustainability and clashing images between stakeholders led to different obstacles in innovation.

As a method, a qualitative discourse analysis (Hajer, 1995; Ruiz, 2009) was conducted by analysing the views and opinions of the relevant private and public actors. This enabled us to link the controversies in this case to discourses on sustainability and rural areas. However, the analysis is not restricted to discourse analysis in the narrow sense, yet pays attention to the communication over and between the divergent and convergent discourses in play. Data for this case-study research were retrieved from research and public documents and semi-structured interviews with entrepreneurs, NGO's, representatives of the main protest group, and public authorities on different scales. The development of this case was followed intensively over a period of seven years.

The outline of the paper is as follows. First some theoretical and methodological aspects of the research will be outlined and the case of the New Mixed Business will be introduced (section 2 and 3). Section 4 and 5 describe how sustainability was framed by actors and how the communication on crucial moments in the implementation process led to an institutional lock-in. Section 6 describes blockades as a result of the formal planning process and the extra investments entrepreneurs had to make. The lock-in will be explained in section 7 from two different perspectives: tension between rural discourses and tensions between logics. Both perspectives provide explanations on a meso-level. The paper ends with a discussion of the results, the conclusions, and some recommendations for communication, leadership and governance.

1. Framework and methodological aspects

1.1. *Discourses*

Reality can be seen as a social construct, which becomes significant in the context of the variety of images, experiences and perceptions of people and how they give meaning to these aspects. Images can be related to different discourses. Here we define discourses as a coherent set of social representations, the terms through which people understand, explain and articulate the complex social and physical environment in which they are immersed.

Different scholars have reflected on discourses and rural development such as Frouws (1998), Hubbard & Gorton (2011), Marsden (2003) and Hermans, Horlings, Beers & Mommaas (2010). In this paper we use the three discourses on rural development described by Hermans et al (2010), For our purposes, this model is suitable, based on the level of analysis and its adaptation to the institutional setting of the Netherlands. Their model can be considered as an updated version of the earlier model of Frouws (1998). The first discourse, the agro-industrial discourse, is associated with the globalised production of standardised products. It reflects the faith in free economic competition and the trust in technology, able to solve environmental issues. The application of technology intensive solutions enables lower input costs through economies of scale. In the agri-ruralist discourse agricultural production is connected to the social dimensions of family-businesses. Farmers are considered to be the stewards of valuable agricultural landscapes and traditional production values. Part of this discourse are new agricultural products and services (farm tourism, nature management, care-farming) and multifunctional land-use. The post-productivist model is based on the opinion that the agricultural sector (in developed economies) is decreasing in economic relevance. The rural landscape becomes more important as 'consumption good' for recreational purposes of the urban population, instead of purely an agricultural production area.

1.2. *Methodology*

The empirical analysis of the case consisted of two steps. First, a secondary analysis of earlier performed studies on the case of the New Mixed Business in the Netherlands was conducted. This was combined with an extensive literature analysis on reports and literature on intensive animal husbandry (see for example Geels, 2009) and reports on the New Mixed Business, such as a sustainability assessment. The second step was an additional empirical research: an in-depth analysis of the opinions, views and roles of the actors involved. In this second step, semi-structured interviews with a total of 12 key private and public actors were undertaken in the end of 2009 and the beginning of 2010. The researchers have followed the case and updated facts and figures since then, till 2014. The data gathering has been completed by collecting information during two group discussions where the draft

results have been discussed. First a Community of Practice on Transition Management (February 4th, 2010) and second a meeting with policy-makers (of the Ministry of Agriculture, Nature and Food Quality, March 15th, 2010). The last meeting provided specific insights in the governance aspects of this case.

The methodological approach is a qualitative one that pursues an in-depth understanding of development processes rather than statistical inferences and measurements. In the interviews, an interview guide was employed as a format to facilitate discussions, but with a considerable amount of freedom for the interviewees/interviewers to digress to capture new insights, issues and themes. The interviews were tape-recorded with the interviewee's permission and later transcribed. A thematic approach was adopted in the analysis of the interview data with a focus on the key research question.

2. Case description: The New Mixed Business as example of industrial farming

The New Mixed Business is, located in a so called Agricultural Development Area[1] in the municipality of *Horst aan de Maas*. The project is in the planning stage. The proposed new complex will be extraordinary large for the Dutch context. As well as a co-digestion power plant and chicken slaughterhouse, the New Mixed Farm will provide housing for 35,000 pigs and 1.2 million chickens. The concept is based on clustering of different agri-sectors to minimise transport distances, reduce fossil energy use and aims to close energy, minerals and waste loops, with several production chains clustered at a single location. The bio-energy plant will recycle manure and organic waste, produce energy and heat for usage on the farm and for the sale of green energy to other businesses and the national grid. The project faced several difficulties in getting the required permits, since this innovative concept didn't fit within the current environmental regulation and planning procedures. This is not surprising, since regulation is based on existing situations whereas innovative concepts explore new ideas and practices.

An advisory report identified potential contributions of this farm model to sustainability such as a reduction in ammonia emissions, the on-site generation of energy, reduced emissions of greenhouse gases and, at the regional level, a significant reduction in smell. Veterinary risks are expected to be lower as a result of the reduction in transport and by minimizing the use of antibiotics. The expectation is that the project will generate employment and improve the working conditions at the participating enterprises.

[1] An agricultural development areas is a category in Dutch spatial planning referring to so called reconstruction areas. In designated areas agricultural farms can expand without the limits of environmental regulations that are applicable elsewhere.

The new initiative deals with sustainability aspects in a specific, technologically oriented way. It can be interpreted as efficiency strategy which combines economic goals (the profit dimension of sustainability) with environmental ambitions (the planet dimension of sustainability). It uses principles from industrial ecology and technical innovation, and transforms nature into technical production units in order to create a controlled, closed production system. In this sense it is an example of a 'bio-economic development trajectory' in contrast to an 'eco-economic' development trajectory. The 'bio-economy' relies on the (largely corporate-controlled) production of bio-mass and bio-fuels, along with other related strands (e.g. bio-technology, genomics, chemical engineering, enzyme technology) (Horlings, Kitchen, Bristow & Marsden, 2010; Marsden, 2010; Horlings & Marsden, 2011; see also Juma & Konde, 2001; Anex 2004; Mol, 2007). 'Eco-economy', is defined as: "the effective social management and reproduction of ecological resources (combinations of natural, social, economic and territorial capital) in ways designed to mesh with and enhance the local and regional eco-system rather than disrupting and destroying it" (Kitchen & Marsden, 2009: 294). It is characterized by a strong embeddedness in specific contexts of space and place.

The 'technical' implementation of sustainability in the case of NGB clashed with the values of citizens concerned about landscape quality and animal welfare. Despite efforts to inform the public, the project faced strong local resistance and fears, as well as a general lack of acceptance of the concept. In November 2006 the first public meeting was held, organised by the government. An inhabitant formulated the skepticism: '*I recognise the attempt to promote the company in an attractive fashion, but to me it is still a meat factory'* (Interview, 2010). According to the representative of the Province of Limburg, the 2006 meeting was a success (Interview, 2010). '*After the meeting, all the points of discussion were taken away by objective information and rational arguments. Later, the health issue was added to the discussion. This is precisely the theme which people reacted on emotionally and which made them feel vulnerable*.'

The local opponents against the initiative organised themselves in a protest group:*'Behoud de Parel'* (Maintain the Pearl), giving voice to the resistance against NMB as an example of mega-farms. The media have devoted much attention to the New Mixed Business, especially in regional newspapers. Their use of terms such as 'mega-farms' and 'pig flats' have had a considerable influence on the image of the project and the decision-making process. In September 2007 a second public meeting was held, then organised by the Socialist Party. The discontent was explicit that evening. '*I can imagine the entrepreneurs hoped to convince others why the initiative was so great. They've tried, but not with much success. What didn't help either was that colleague farmers found out that the New Mixed Business was to receive 50% of the rights to keep animals for free. They thought this to be unfair preferential treatment*' (Interview, 2010).

In response to the public resistance, the local council demanded a sustainability study. On 8 July 2008 the local authority accepted the New Mixed Business' application for a location in *Grubbenvorst*, but only after intense discussion in the city council in February 2008. *'The social democrats found themselves in a tricky position, because they also participated in the City Board. The Socialist Party was absolutely against the New Mixed Business. During the meeting the emotions ran high. The public gallery was packed and regional and national media were present*' (Interview, 2010).

The Council agreed with the smallest possible majority on the condition that the entrepreneurs would meet some additional sustainability criteria regarding landscape quality. Since then societal protests have continued. The discussion incorporated the public health theme and was scaled up to the national level where national environmental organisations became involved. A health risk inventory was conducted in 2010. It concluded that no significant impact was to be expected from the New Mixed Farm. A local general health practitioner criticised this inventory, saying *'that it was based on old research methods, based on models only. Also just large particles fine dust were considered, but the smallest fine dust particles are far more harmful.*' (Public hearing committee, March 2010).

In November 2012 the local government provided the necessary licenses for the first phase of the building project. On April 2nd of 2013 the 'Council of State', the highest juridical institution in the Netherlands, rejected the environmental permits due to an administrative error: the province had not published their decision in the edition of the local newsletter (of *Horst aan de Maas*), but in the edition of the neighbouring city Venlo.

However, the regional government, the province of Limburg, decided on 21st January 2014 to approve the environmental permit for a part of NMB, the pig holding. On March 3rd 2014 the national court rejected the appeals of the protest group and 43 co-plaintiffs against the building permits for the new business. Most plaintiffs were considered as living to far (till nearly 5 km) of the planned building locations. The 5 remaining complaints were considered unfounded.

3. Communication, contestation and controversies

The planning process has led to increasing tensions between inhabitants, NGO's, policy-makers and the initiating entrepreneurs, which led to a lock-in situation. A conflict on the level of discourses occurred. One could argue that it is the city councils role to make difficult decisions and end the discussion via the legal way. A small majority of the council was in favor of the initiative, but the local protests remained severe, and were reflected in political tensions. The local alderman found himself trapped between the actual political situation and his aim to facilitate an innovative initiative. The alderman acknowledged that he identified himself with the initiative as a desirable development, instead of choosing a neutral position or

checking the view of inhabitants towards the plans. '*Probably a more neutral positioning towards the initiative -Here's a new initiative, how do we feel about it? - would have been better. Now I was associated as agreeing with the entrepreneurs and seen as advocate by the action group*.' (Interview, 2010). He admitted that he recognised relatively late that his personal normative position in combination with his role as alderman led to distrust towards the local government within the community.

The province of Limburg played a role in this situation, by introducing the so called Agricultural Development Areas. Originally designed as new location for intensive farms nearby ecological vulnerable areas, these areas turned out to be locations for the up-scaling and further intensification of live-stock production. Opposing parties on the local level -including general practitioners- and national level found each other in an alliance, bringing in national themes in the local debate, such as public health.

The national Ministry promoted innovative sustainable initiatives on the one hand, but at the same time was bound by legal regulations regarding the number of animals and the environmental legal frame regarding manure, which made the transport of manure between firms impossible. The Ministry also identified itself with an industrial ('bio-economic') discourse without recognising the implications of alternative ways of animal husbandry production.

The entrepreneurs were willing to explain their point of view to the public, but it was beyond their capacities to communicate all the pros and cons of intensive animal stock production on different levels to a large number of actors. The combination of these ingredients turned into a lock-in situation. The following factors have contributed to this situation.

4. Public resistance: images, communication and the role of the media

The local opponents against the initiative organised themselves in a protest group: *'Behoud de Parel'* (Maintain the Pearl). Their arguments referred to a variety of local aspects, such as the expected changes in the landscape (due to new large-scale buildings), smell, the amount of traffic the business will most likely attract, the safety of the infrastructure and health aspects such as dust, and the potential health risk of the MSRA bacterium. The protest group pointed out that the region faces an accumulation of activities affecting the landscape, such as a large international scale green open-air exhibition in 2012, a large-scale glasshouse project of 375 ha, and a major sand excavation area. The NMB on top of all these plans has caused resistance; it was simply too much for the inhabitants.

Not only practical arguments and local concerns but also more principal arguments about animal welfare and resistance against the 'industrial way of

agricultural production' in general played a role. At some point the suggestion was made to transfer the NMB to an industry park. Even for the entrepreneurs this was one step too far. *'The context of an agrarian setting is vital. In my view it is impossible to maintain contact with society if the business is located on an industry park. Alienation will be the result.*' (Interview, 2010). Some people communicated global arguments such as the environmental impact of import of animal food from developing countries. *'Different discussions were combined,; actors with different agendas, operating on different spatial scales, formed an occasional coalition. This came as a surprise to the governmental actors and hesitation arose.*' (Interview, 2010). In the debate, discussions on different spatial scales became intertwined. Local arguments were combined with NIMBY-arguments against any intensification in land-use in this region and with national protests against intensive animal production in general.

Blockades can occur when people don't want to, or are not able to reflect on their own framing. In this case there was a lack of openness, communicated in the form of justification of private images *("the situation is un-deniably like this"),* judgments *("those people are not trustworthy")* and lack of trust in procedures *("we have always done things this way*"). Symptoms of this communication blockades were the presence of taboos, repetitive actions, a vicious circle of arguments in discussions and escalating conflicts.

One of the blockades resulted from the way entrepreneurs and the local council communicated towards the local community. The New Mixed Business, supported by a coalition of consultants, policy officers and scientists, was pursued as a technical-rational design process. The focus was on issues such as how to develop a technical efficient and economic viable business, paying attention to (technical) facts instead of feelings and emotions. Supporting research was also technically framed and perceived by the public as subjective and expressing positive opinions toward the NMB. One of the consequences was that people became suspicious when new research was launched, expecting this would not be objective but in favor of the new business.

Communication of the entrepreneurs and local government with local inhabitants was carried out in a one way mode, using technical arguments, and not including a more normative discussion about animal welfare and housing in large scale intensive agriculture. Local concerns were addressed with a technical response, thus missing the point of the concerns: public health risks, vaporisation of the open landscape, well-being and social cohesion. These issues were too easily dismissed by the pro-coalition as 'emotional responses'. *'The attitude was: 'we'll explain it once more' and 'how can you be against this development'; that type of reactions*'. (Interview, 2009). The effect was that the inhabitants felt ignored and misunderstood. The timing wasn't accurate as well; the interaction with the local community started rather late. Key decisions about the design of the firm had in fact already been taken when

people were informed, and thus didn't leave much room to maneuver. This raised the suspicion that local authorities were not objective.

The researchers have observed the communication of the main actors and termed and categorised these as 'communication reflexes'. The term reflex, used in health science in the context of body-reflexes, is applied here to describe the - in the governments view logical - responses to the protests and 'incomprehension' within the community. Communication, in which the local government played a major role, was influenced by the opinions and beliefs of the pro-coalition actors. This led to three 'reflexes' towards the local community, when protests and obstacles emerged:

The *rationalisation reflex*, by underestimating and playing down the arguments, and by ignoring people's emotions and feelings. Non-rational arguments were taken not seriously, underestimated or recognised too late by the local government. People expressed concerns about the technical concept, which was perceived as a controlled and efficient management system of input and outputs. This perception was connected with an image of 'anonymous food production' with no recognisable contact between primary producer and consumers and on a scale which people couldn't relate to.

The *education-reflex*, by providing information material, organising information meetings and repetitive communication patterns *('we'll explain it once more')*. The assumption here was that people who are better informed will be more positive towards new developments. The attempt was to objectify the discussion as a response to the media who reported mainly negative about this new initiative. However, as a counter-force, the local protest group organized their own information meetings, cooperating with environmental organisations, scientists sympathetic to the protest and the local socialist party. The local general practitioner took a firm stand against the NMB by bringing in information on the potential health risks into the discussion. This led to an up-scaling of the discussion as well as further polarisation between the different opinions.

The *research reflex,* by initiating new research and mapping the (technical) effects in detail. The assumption was that it is possible to prove scientifically that the concept of the New Mixed Business is more sustainable than other types of farming. Two problems occurred however: first, there is the methodological question how and with which type of farm NMB should be compared, an average live-stock farm or a less innovative mega-farm? Second, which criteria should be taken into account in the assessment, strict environmental criteria, or a wide range of criteria including social and cultural considerations? Both methodological questions refer to conflicts between different values. When people have deeply rooted objections against intensive meat production, they will not be convinced by reports which state that a farm is relatively sustainable, compared with the standard intensive animal husbandry.

On the national level, the Ministry of Agriculture was in favor of a strong intensive agriculture in the Netherlands, able to compete on the world market. Explicit references by senior policy officers were made in this respect. But at the same time the Ministry felt unpowered to start or facilitate a discussion due to internal ambivalence within the organisation towards these new developments.

The entrepreneurs felt that it was not their local responsibility to legitimise or defend intensive agricultural production. According to them this should be part of a national debate. The New Mixed Business created a lot of attention in the media, on local and even national scale since 2005. Discussion and images about 'pig flats' and 'mega-farms' frustrated the new business which was seen as not principally different or more sustainable than the standard form of intensive animal husbandry. The vulnerability of the current food system worsened the situation. Food scandals such as the dioxin affair and animal diseases (pig fever and the chicken flew) have severely affected the image of Dutch intensive animal husbandry. This raised the suspicion *'that also something must be wrong with this initiative'*. The reticent role of the farmer's union didn't help either. In the meantime other large scale intensive farms were built in this area without the environmental benefits of NMB, which, strangely enough, didn't raise as much public protests as the NMB initiative. This indicates that the NMB was functioning as a catalyst for a clash of discourses.

5. Investments and spatial planning

Innovative concepts such as NMB require a variety of investments such as financial investments in the design and implementation of the business, but also in co-operation, knowledge, communication and political support. Some of the investments stretched beyond what can be considered as reasonable, taking the situation of the entrepreneurs into account. For example, the initiators had to provide a huge amount of extra financial and businesses management information to convince local councilors in order to get the necessary permits. This was perceived by the entrepreneurs as unjust. The required information can be seen as an effect to reduce uncertainty, such as public health risks. Uncertainty however, is an inevitable aspect of innovation. In this case a governance style occurred which tried to pass over the risks and responsibility towards unknown factors onto entrepreneurial shoulders.

An important obstacle was the formal planning process. The local council intended to combine the decision making about the location of the New Mixed Business with the spatial planning discussion in this region about the designation of so called 'agricultural development areas' in order to save time. The aim was to create more speed and clarity in the planning process. However, this apparent mixing of politics and spatial planning aspects caused public resistance. The suspicion rose that a deliberate coalition of the ruling Christian Democratic Party on

local, provincial and national level had been created. So a discussion on content was mixed with a discussion on political relations. The result was mistrust.

Also tension arose during the process between innovation and political accountability. The innovation aspects of the new concept, for instance new technical equipment (air washers, manure pipelines), and the increase of animal rights granted by the agricultural Minister, were not foreseen in the existing regulation. This caused much delay in the implementation and the requirement of the necessary environmental permits.

7. Analysis: explanation of the lock-in situation

The obstacles in this innovation process can be explained from two different perspectives on the meso-level of analysis. The first perspective refers to the different discourses we described previously, the agri-industrial, agri-ruralist, and post-productive discourse. Differences between these discourses partly explain the clashing images about sustainable agriculture in this case. The actors involved in the communication process in this case have different institutional roles and logics: governmental, entrepreneurial, societal and scientific. We would argue here that the dynamic interaction between the two perspectives forms an explanatory frame for the lock-in situation (see Figure 1).

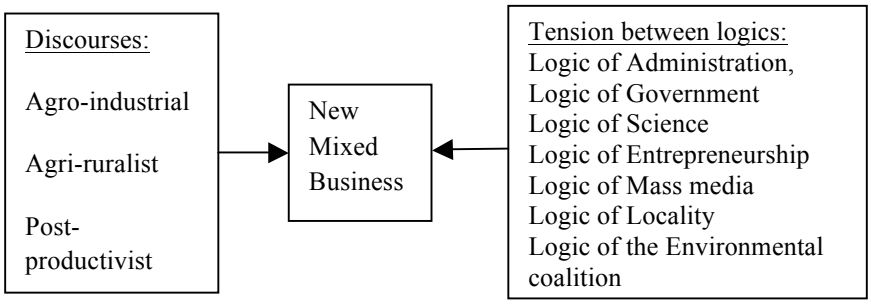

Figure 1. *Explanatory frame*

7.1. *Tensions between rural discourses*

The objections, images and blockades can be related to value-based discourses about agriculture and rural development, creating controversies. The tension between discourses in the case of NMB is nuanced. The outskirts of the village of *Grubbenvorst* show an agricultural countryside. The primary function of agricultural production in this rural area is undisputed amongst the inhabitants. The vision of the founders of the NMB is in line with the *agro-industrial discourse*. The economic

rationality in design, scale and intensity of production and the focus on the technical design of the initiative underline this.

Part of the local residents has however formed a coalition with some of the farmers in the area. Their arguments refer to the *agro-ruralist discourse*. They object to the transformation of the traditional soil-based family-based agricultural production to an industrial form of food production in this area. More specifically, rural and village inhabitants protest against glasshouse production and mega-farms. They also use arguments such as quality of life (*'children playing happy outside in Grubbenvorst'*), health (dust) and animal welfare (no 'flats').

Other inhabitants had concerns toward the effects of NMB on the landscape. The speed of conversion is relatively high, leaving little time for people to adjust to the changes in the landscape. The perceived changes in the landscape are in conflict with their perception of landscape from a *post-productive* discourse.

7.2. *Tensions between logics*

A complicating factor was the use of different types of logics. Entrepreneurs' actions are based on their situational logic, with the aim to develop an economical viable business. Local councilors operate on a political logic basis, while administrators also use their administrative logic, the rationality of legal frames and plans. Inhabitants use their own locally and culturally embedded logic, while regulators use an instrumental logic, referring to rules and regulation. Figure 2 shows different types of logics found in the NMB case. The different actors are grouped in two main coalitions. The positioning of the local government develops over time from strong advocate to mild advocate of the NMB, as was expressed by the alderman. Yet the positioning is not neutral, as is expressed in Figure 2.

The encountering of these types of logic raised all sorts of tensions. When the protest group raised objections against the New Mixed Business, the steering group which supported the initiative, tried to neutralise the protests by playing down the arguments, by repetitive communication patterns (*'we explain it once more'*) and by starting new research, which would deliver the 'objective' arguments in favor of the NMB. However, it doesn't work trying to change already rooted opinions by giving more one-sided information. Such an approach underestimates the importance of emotions, emotional arguments, and principal human values. In order to create an effective vital form of interaction, a balance has to be created between different types of logics. Tensions between logics don't disappear, but leadership can play a role in mediating between different logics and tensions between discourses.

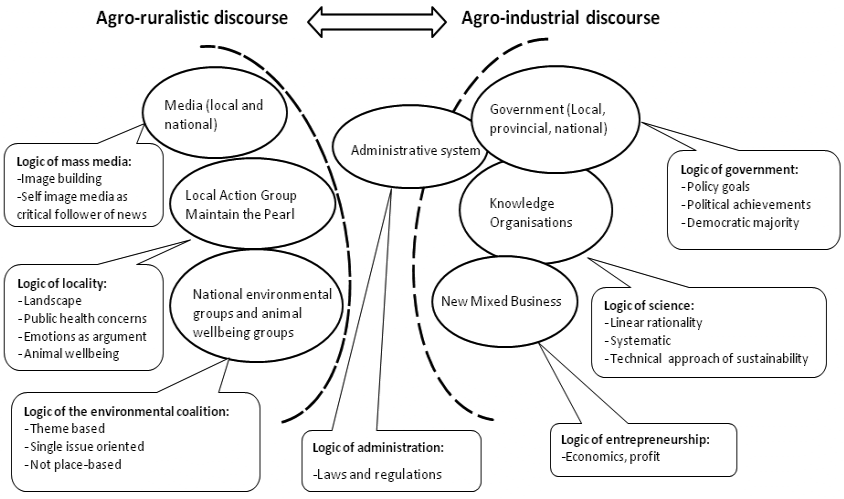

Figure 2. *Positioning of actors, discourses and logics of action*

The relevance of multiple discourses and logic of roles is that no central steering point or meta-discourse exists. On the regional level, there is no single authority in the Netherlands that holds the power to govern alone, as we can witness a diffusion of power and a variety of public and private actors in the decision arena. This raises the question whether if it is desirable to align all these actors around a joint development agenda? And how to enable such alignment?

Although we hesitate to formulate a policy recommendation that is in fact normative, we cannot neglect the potential long term negative societal impact of non-handling the tensions that arose in this case. Our suggestion lies in a form of leadership that connects persons, roles and discourses. This requires leadership which is not persuasive but seducing, not individually exercised but targeted at building coalitions. It involves not necessarily the establishment of one dominant discourse and actor coalition. It can well be aimed at the co-existence of multiple discourses, aiming at changing the potentially blocking polarity into productive creativity. It requires the ability to create capacity to act, to build bridges between organisations and to mobilise actors in a process of dialogue (Horlings, 2010; Horlings and Padt, 2013). Place-based leadership can in this context contribute to an improved: 1) capacity to set a vision for the future 2) likelihood to achieving that

vision; 3) flexibility and resilience when confronted by change 4) social and institutional capital 5) vertical relations with government, and horizontal relations with partners and other stakeholders. Sotarauta (2010) for example refers to institutional entrepreneurs who are important as 'bricoleurs' for change and innovation in regional development. Such leaders in regional networks work beyond traditional boundaries with state, non-state, business, etc. They seek to make sense of new situations, processes, and dynamic policy shifts.

In this case the private founders of the NMB for instance showed leadership in taking initiative, developing sustainable innovations and in enthusiastic communication about the contribution of their concept to sustainability. Several policy officers showed institutional leadership in removing obstacles in the process. Hanssen (2011) describes how local councilors in particular can play a role in constituting the primary link between citizens and public decisions. Leadership of governmental actors in this case was focused on group building of people with the same opinion who knew each other in close networks ('bonding'), but less on connecting different authorities ('linking') and even less on building connections between people with different opinions ('bridging'). The national Ministry, who was potentially in the position to express leadership in organising a societal debate, was in the case of the New Mixed Business reluctant to do this, due to internal ambivalence. We would argue that a more 'inclusive sustainable development' addressing a variety of aspects of animal production, such as health, ethics, solidarity and animal welfare, requires a more active leadership role of governmental actors, mediating between logics and discourses.

8. Discussion and conclusions

In the last decades there has been a growing acceptance of the fact that government to a lesser extent can impose its policy onto citizens, and must coordinate and negotiate both policy making and implementation with partners in public, private and voluntary sectors (Stoker, 2002). Hence, local government is considered to be participating in spaces of negotiation in which compromises are reached (Fontan, Hamel, Morin & Shragge, 2008).

Different situations require different roles and orientations of government layers. In the case of the NMB there was a misfit between the initial position and societal acceptance of the initiative. The governmental reaction in the process was on the one hand risk avoidance and on the other hand a rather fierce reaction towards the opposing action group, with a tone of (mutual) distrust. The local authority chose to facilitate the initiative in the legal process and followed a strategy of hierarchical steering. This deepened the distrust at the local level. The opposing opinions pleaded for a more interactive governance approach, and to formulate explicit common goals on intensive animal husbandry.

The conclusion is that governance, in the process of developing an appropriate role in stimulating innovation, oversaw and missed the necessary step of adjusting and adapting to the context of conflicting opinions and interests. In the case of the innovative industrial farm NMB three 'reflexes' have been found in the communication towards the local community, wherein the local government played a key role:

- The rationalisation reflex by playing down the arguments, ignoring emotions and feelings.
- The education-reflex by providing information material, organising information meetings and repetitive communication patterns.
- The research reflex by initiating new research and mapping the (technical) effects in detail.

The case showed that innovation requires a variety of investments, not only financial, but also investments in co-operation, knowledge, communication on different scales and political support, which stretched beyond the entrepreneurs' capacities and responsibilities. A governance style occurred which tried to pass over the risks and unknown factors onto entrepreneurial shoulders.

The institutional lock-in has been analysed as an intertwinement of clashing discourses and tensions between logics. This case shows how innovation can be hampered by existing regulation, the formal planning context and societal protest. The case also illustrates how public resistance can occur as a result of a miss-match between the business storyline of the entrepreneurs and the normative and emotional storylines which dominated the public debate.

Here institutional dynamics interfered with local circumstances. The outcome of this interference was a difficult to manage process, given the mutual mistrust and societal tensions. Underlying clashing discourses, rooted in different human values, led to a lock-in. The gap between the different positions wasn't bridged, due to the chosen positions of the involved actors. Social protests were perceived by policy as unwanted resistance, instead of as potential for the transformation of our food production system (Hassanein, 2003).

The transition of agriculture (Geels, 2009) and innovation within sectors requires leadership on different levels. This includes the facilitation of public discussion in the planning process, adapting to the local, regional and national scale. On the national level, opportunities lie in the implementation of a broad 'value-based' debate on sustainable agriculture, referring not only to technical aspects but also to a wide range of other aspects such as health, the consequences of industrial meat production, ethical aspects and food sovereignty. On the regional level, debates can be organised about different spatial scenarios for agricultural development, such as 'two track agriculture' (soil-based extensive agriculture versus intensive production), and how this can be facilitated by policies and planning. On the local level the challenge lies in the design of 'eco-economic' farming systems which are more place-based, adapted to the landscape characteristics and embedded in the

community. Such systems have to include practical solutions for local environmental problems, such as transport, smell and dust.

A more general observation is that governments are willing to support new innovations in agriculture and support these with project subsidies and access to scientific knowledge. However, in situations like in the described case, where contested issues and controversies emerged, governments may be unable to predict and deal with the obstacles that such a large scale innovation undoubtedly faces, such as public protest, inflexible regulation and the formal planning context. Innovation requires an attitude which takes insecurity into account: 'things might work, but we don't know yet'.

Leadership can play a role in dealing with controversies, mediating between discourses and logics. The transition of agriculture requires policy leadership on different levels. This includes the facilitation of public discussion in the planning process, adapting to the local, regional and national scale. Although policy officers showed institutional leadership in removing obstacles in the process, local councilors and the national Ministry could have played a stronger place-based leadership role. Such roles are referred to in literature as shared, cooperative or collaborative (Collinge & Gibney, 2010; Collinge, Gibney & Mabey, 2010; Sotarauta, Horlings & Liddle, 2012; Pugalis & Liddle, 2014). The body of literature on place-based leadership shows how this can guide and facilitate transformation by stimulating the imagination, (re-)framing issues and developing new visions, in order to ‘try to think the unthinkable’. It is important to distinguish here between formal and informal leadership. As Sotarauta et al. (2012) note, leadership is often recognised in terms of formally constituted hierarchical power and while formal offices are important – mayors, members of government-appointed boards, etc. – leadership is also expressed informally which can enable ‘negotiations between the scenes’. Collaborative leadership, sensitive to the place-specific context, can work as ‘connector’ between different visions and opinions, referring to the ability of leaders to influence the ways collective interpretations emerge and are shaped (Horlings 2010; Sotarauta, 2009). In other words: collaborate leadership contributes to the framing of issues and the communication of a so called ‘sticky story’, aligning different actors around a joint agenda (Van der Stoep, 2014). Leadership skills such as formal and informal communication, building trust, perseverance, flexibility in roles and the ability to connect different worlds and logics are important elements in such collaborative leadership.

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