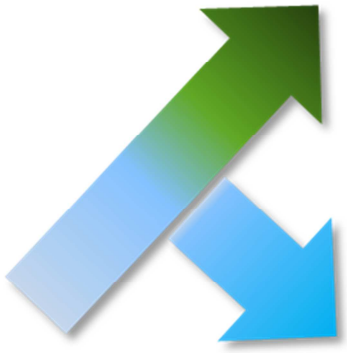

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Annex 1 - Conceptual Framework

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Food4Sustainability: conceptual framework – v 16/09/16 (HJ)

1. Presentation of the study

Food retail corporations and fast food chains are powerful actors of the dominant food system. They exert strong lock-in effects that hinder transition towards more sustainable food systems. This occurs through the criteria they impose to the upstream part of the food chain (e.g. standards, volume requirements), and through their products offering, which make sustainable food products lowly available for consumers.

Over the last few years, several initiatives involving these corporations have emerged in Belgium, such as the introduction of local products in supermarkets, and the emergence of new types of fast food chains, the so-called 'healthy fast-casual' chains proposing healthier dietary patterns for eating on the go. Van Amstel et al. (2012) argue that such networks that establish coalitions between niche and regime players are at the basis of real innovations and transitions towards more sustainable food systems. Exploratory field work done in a first phase of this research has shown that these processes are dynamic and involve a variety of actors: new healthy fast food casual chains can have strong interactions with organisations from civil society, and retail corporations can work together with local private initiatives and/or local authorities.

In this second stage of the F4S project, we examine to which extent the emergence of new healthy fast-casual food chains and the development of local sourcing in supermarkets can contribute towards a sustainability transition in the food sector. We thus address the following research question:

Are interactions between food retail corporations and local initiatives, and between healthy fast-casual food chains and* organisation from civil society *contributing to a deep transformation of the dominant food system in Belgium (i.e. leading to changes in practices and values within the organisations), and if so, how? Is the introduction of local products on these corporations' sourcing an opportunity for profound change (i.e. for alternative farming practices and social and solidarity economy practices to scale up) or does it rather reinforce the lock-in of the dominant system?

This question is investigated through the analysis of seven case studies in Belgium:

- Four initiatives of local food provision (Promogest, Hainaut Développement, Made-in-BW and Straffe Streek) and their interactions with the main large food retail corporations operating in Belgium;
- The case of a healthy fast-casual food chain and its interaction with organisations from civil society and some of its suppliers that are involved in more sustainable ways of producing and processing food.

2. Conceptual framework

2.1 Multi-Level Perspective Transition Pathways

The overarching analytical framework for this study is inspired from the literature on sustainability transitions, and more particularly, it is based on the multi-level perspective (MLP). Within the field of sustainability innovation studies, there has been an increasing attention to the MLP to study systemic transitions to sustainability (Geels, 2004; Geels and Schot, 2007; Hargreaves et al., 2013; Darnhofer, 2014). The MLP argues that transitions are non-linear processes that arise from the interplay between three analytical levels: landscape, socio-technical regimes and niches/novelties. These three levels are said to form a 'nested hierarchy', meaning that regimes are embedded within landscapes and niches within regimes.

The level of landscape describes long-term trends at a macro-level that are beyond the direct influence of actors and cannot be changed at will. However, in the long-term, the landscape may be influenced by the levels of socio-technical regimes and niches.

Socio-technical regimes are empirical domains at the meso-level, like food, mobility or energy (Geels, 2004; Elzen et al., 2004; van Amstel et al., 2012). Activities within socio-technical regimes are to some degree aligned and stability is created through amongst others stabilised legally binding contracts, sunk investments and stable rules. Also, stability is created through organisational capital, in which mutual role expectations and cognitive routines lead to stability, and in this way create 'blind spots' for developments outside of the regular focus. In this way, core capabilities of regime actors may turn rigid and actually inhibit changes towards more sustainable systems. Moreover, on a more individual level, stability is created as people adapt their lifestyles to existing regimes. In other words, stability in regimes leads to stability, or lock-in, in cognitive patterns of regime actors (be it organisations or individuals). Hence, in order to be able to create change, new patterns of doing and knowing need to be learned.

The argument above that socio-technical regimes are characterised by lock-in does not mean, that innovations do not take place in regimes. Nevertheless, innovations in socio-technical regimes are mostly of an incremental nature. The above also does not mean that stability is harmonious, or the outcome of a force of one powerful actor. Indeed, there may be tensions and conflicts within socio-technical regimes. When these tensions become pressing, regimes may lose their stability, which will create opportunities for change. It should be mentioned, however, that generally, tensions in socio-technical regimes remain manageable (Elzen et al., 2004).

The third level, niches or novelties, is where innovations struggle against existing regimes. Some of these innovations will later be taken up by the regimes, while others will fade away. If successful, over time these niches stabilize. In this sense, niches can be seen as seeds for systemic change. Niches are generally less articulated, less stable and less clear-cut than socio-technical regimes (Geels, 2004). However, niches provide a 'safe space' or 'incubation rooms' for more or less radical innovations. As long as the innovation is not stabilised, the niche provides a space where all kinds of learning can take place and institutional capacity can be built for wider transformations of socio-technical regimes. This learning can for example take place on technical specifications, user preferences, symbolic meanings or supply and distribution networks (Elzen et al., 2004). Nevertheless, to be able to create real change, it is important that what is learned in the niche is shared with, and embedded in the regime (van Amstel et al., 2012). This means that niche-regime interactions are crucial for deep and lasting regime changes. In other words, learning through niche-regime interactions plays a key role in sustainability transitions.

Geels and Schot (2007) develop a typology of transition pathways on the basis of two criteria: timing and nature of niche-regime interaction.

First, the timing of the landscape pressure on the regime with regard to the state of developments (and learning) at the niche level is of particular importance for the course of transition pathways. If at the moment a landscape pressure occurs, a niche is not fully developed, there will be a different transition pathway then if the niche would have been fully developed (Geels and Schot, 2007; Verbong and Geels, 2010). Geels and Schot (2007) mention however that the stage of development of a niche is not objective, as niche and regime actors may have different perceptions.

Second, the nature of interaction between the three levels is of particular importance when classifying different transition pathways. According to Geel and Schot (2007), this can be:

- Reinforcing or symbiotic and therefore having a stabilizing effect and forming no driver for transitions;
- Disruptive and competitive and therefore exerting pressure on the regime, fostering transition.

Based on these criteria, five different transition pathways can be identified:

1. **Null-state**: In case there is no external landscape pressure, the regime will continue reproducing itself. Although niches may be present, there is little chance for them to break through (Geels and Schot, 2007).
2. **Transformation pathway**: In the scenario of a transformation pathway there is a disruptive landscape pressure. Criticism from outsiders (e.g. social movements, public opinion) is especially important, because it creates a pressure on regime actors to make changes. This usually involves conflict, contestation and power struggles. Niche innovations are not yet sufficiently developed to take advantage of the windows of

opportunity created by this pressure. Regime actors therefore make use of niche innovations by picking up the lessons learned and incorporating them in the practices and routines of the existing regime. These symbiotic niche-innovations thus add to the regime and do not disrupt its basic architecture. Regime actors survive the disruptions although some changes may occur in social networks (Geels and Schot, 2007; van Amstel, et al., 2012; Verbong and Geels, 2010).

3. **Reconfiguration pathway**: The reconfiguration pathway strongly resembles the transformation pathway. External landscape pressures challenge the regime. In this pathway, however, niches are more developed. In a first instance, regime actors are driven by economic considerations to adopt add-ons or components from innovative niches to solve local problems in the regime, while leaving the basic architecture of the regime unchanged (Geels and Schot, 2007). Yet, the difference with the transformation pathway is that these add-ons trigger further change and therefore impact the regime's basic architecture. The new regime thus grows out of the old regime, changing the guiding principles, beliefs, practices, social relationships and networks that are connected to the old regime (van Amstel, et al., 2012; Verbong and Geels, 2010). Geels and Schot (2007) argue that the reconfiguration pathway is especially applicable to distributed sociotechnical systems that function through the interplay of multiple technologies (e.g. agriculture, hospitals, retailing).
4. **Technological substitution**: In the pathway of technological substitution there is a strong landscape pressure that occurs on the dominant socio-technical regime at a moment where a niche is strongly developed. In this case the disruptive pressure creates a window of opportunity for the niche to break through, serve increasingly larger markets and eventually replace the existing regime. The relationship between the niche and the regime is thus competitive in this case. This pathway, then, leads to the fall of incumbent regimes.
5. **De-alignment and re-alignment**: In the pathway of de-alignment and re-alignment, strong pressures lead to major problems in the existing regime, which may cause regime actors to lose faith. This leads to the collapse of the regime (its de-alignment). However, there is no niche-innovation that is sufficiently developed to be a clear substitute, leaving a vacuum. This, together with the lack of stable rules, leads to the rise of multiple niche innovations and widespread experimentation followed by a long period of co-existence and uncertainty. In the long run, one innovation gains momentum and becomes the new dominant regime. Leading to the re-alignment and the re-institutionalization of a new socio-technical regime (Geels and Schot, 2007; van Amstel, et al., 2012; Verbong and Geels, 2010).

It should be stressed that these pathways are proposed as ideal types. In reality, a case may have elements of more than one pathway. Moreover, if researched over a longer period of time, a sequence of different transition pathways may occur (Verbong and Geels, 2010). Van Amstel et al. (2012) argue that until now the typology has only been used to analyse long

term historical processes. They justly pose the question whether these ideal types could be used as scenarios for change in the context of current transition dynamics in order to accelerate and guide transition processes.

Application to F4S phase II

The Food4Sustainability focuses on the agro-food regime. This term is aimed at capturing all the practices that are involved in the production, consumption, distribution, processing and marketing of food (Beierlein, et al., 2008). In Phase II, the focus is placed on the interactions between regime and niche actors. Our main research question can then be divided into two main guiding questions:

- ***What are the outcomes of such niche-regime interactions?***
- ***Can these interactions lead to a regime change either by influencing the strategies and practices of retailers and new healthy fast-casual chains, and/or by helping scaling up the local initiatives?***

The aim is to study how patterns of learning in niche-regime interactions may contribute to a transition of the dominant food regime towards a more sustainable one. This translates into more specific objectives: assessing the impacts of these interactions on retail corporations' and healthy fast-casual chains' strategies and practices, and to evaluate whether these impacts are rule changing or not. In other words, whether they can induce marginal adjustments of the corporations' strategies and practices, or whether they can trigger deep changes at the regime level (i.e. on the strategies and practices of all the actors of the food system).

In order to further be able to characterise patterns of change we build on the typology of transition pathways proposed by Geels and Schot (2007). In a first instance, these pathways were developed to analyse long-term historical processes of change. However, van Amstel et al. (2012) have started making an attempt to use the pathways as scenarios for change in the context of present and future transition dynamics and to see whether these pathways are sector specific or whether they are universal, transsectoral and transhistorical. Indeed, they argue that the value of these pathways partly lies in the fact that once a certain pattern of change is recognized, transition management can become more focused and effective.

The question in this research can then be re-written as: ***whether it is possible to identify which transition pathways that may result from the interactions between food retail corporations (regime actors) and local initiatives, and between healthy fast-casual food chains and organisation from civil society***. Bearing this in mind, the aim of the research is analyse whether the cases we study contribute to triggering a profound change in the basic architecture of the regime (i.e. a transition), or whether they are rather add-ons to the incumbent regime without changing its basic architecture (i.e. they contribute to a reproduction process: innovation does exist but it does not lead to a deep transformation of the dominant system).

Although the MLP in this sense offers a coherent analytical framework, it is less apt to offer the tools to research these levels empirically. Therefore, we need to expand our level further in order to be able to look at these interactions and the way in which they actually change or do not change socio-technical regimes. We do this by looking at the importance of practices and values, and how they change through interactive learning processes. Schatzki (2011) argues that all large societal phenomena (as well as all micro-phenomena) such as socio-technical regimes are made up of bundles of practices and material arrangements. In this sense, it could be argued that practices are the most basic unit of analysis of each of the levels of the MLP and therefore can be used to study each of the levels of the MLP as well as the change that takes place within them. Moreover, both practice theorists as well as theorists of the MLP have stressed the importance of beliefs, symbolic meanings and values on the way in which practices are carried out.

Therefore, in order to analyse the evolution of the agri-food system in Belgium and to answer the above question, we adopt three different strands of analysis:

- The way in which the practices of the retail corporations and of the actors involved in the local initiatives influence and are influenced by these interactions;
- The way in which the values (i.e. beliefs, motivations and strategies) of the actors involved influence and are influenced by these interactions;
- The learning processes facilitating these evolutions.

The following sections will present the concepts of practices and values more in-depth.

2.2 Practices

As mentioned above, practices are the basic analytical level of each of the levels of the MLP. There has been a wide range of studies focusing on practices, which has led to a several definitions of practices. In this research we follow Schatzki (2002:14) in seeing practices as: "open-ended, spatially-temporally dispersed nexus of doings and sayings." In this sense, the idea of a practice is wider than that of a mere activity.

A consensus on how to research practices in reality is far from being reached. As Crivits and Paredis (2013:311) argue:

> Practices are considered to be both concrete and heterogeneous. This leads to difficulty in finding solid empirical categories to describe a practice. (…) We argue that because the object of analysis is located at the level of the heterogeneity of 'everyday' practice (…) the routines investigated and described are to a significant extent determined by the specific case (and its analysis) that one takes to be the practice. This co-determination of theory (conceptualization of contingency in practices) and the object of theory (categories of specific routine behaviour) need to be taken along in the evaluation of the practice approach as an explanatory framework. **The non-essentialist logic of the practice approach thus allows the descriptive categories to be co-determined by the studied practice as such**. (bold added)

It thus follows that those elements that are taken to be a part of a practice are heavily dependent on the purpose and subject of the research. Within this research, we focus on practices in Belgian agro-food systems. We will therefore take a holistic perspective by looking at food provisioning as not only consisting of production and consumption, but also by studying processes of change behind the wide range of activities that link production and consumption. These activities are often called the marketing functions and include: buying, selling, storing, transportation, processing, standardisation, financing, risk bearing and marketing intelligence. In their turn, these categories can be sub-divided in three groups: exchange, physical and facilitating functions (Table 1).

These functions are however a non-exhaustive enumeration of practices performed in food supply chains. We therefore suggest integrating into the scope of analysis: R&D, communication/marketing, internal organisation, and partnership management/coordination practices.

These functions need to be performed in every food supply chain. However, there is a wide variety in the ways in which they may be performed. Within the dominant agro-food system, specialised actors, such as traders, processors, banks, insurance companies and inspection firms, perform these functions in a highly specialised way. Each of these actors has developed its own logics and rules and tries to impose these onto other actors in the food system, primarily the weakest actors, that is, farmers and consumers (Edwards-Jones, 2010). Initiatives that aim to render the food system more sustainable organise these marketing functions differently. Each of the practices will still be there; yet the ways in which the practice is performed may vary strongly. For instance, in a narrow definition, "standardization" is only one way to ensure that products are in conformity with a number of technical criteria; the building of relationships on the basis of trust between producers and consumers, as seen in direct producer-to-consumer schemes, is another tool that can fulfil the very same function. Similarly, "market intelligence" is a tool adopted by retailers and processors of the mainstream system to monitor market conditions; in alternative food systems, actors receive feedback through other, mostly informal channels, such as shared governance and/or direct interactions with the other food-chain actors (Zwart et al., 2016). Therefore, one of the stakes of this research will be to understand how the various functions outlined can be fulfilled differently.

Table 1: The marketing functions explained (Beierlein, Schneeberger, and Osburn, 2008; Crawford, 2006)

	Function	Explanation
Exchange functions	Buying Selling	Overcome separation of ownership. The seller offers a product that is wanted by the buyer, and exchanges something in return. In this way, the legal title of the product is transferred from buyer to seller.
Physical functions	Storing	Overcomes separation of time. As agricultural products are seasonal, storage can balance supply and demand by smoothening supply throughout the year and keeping the produce in good condition between production and final sale.
	Transportation	Overcomes separation of space. Makes the product available there where it is needed.
	Processing	Overcomes value separation. Processing is a form changing activity meant to increase the utility for the consumer and thereby increasing the value.
Facilitating Functions: those functions that make systems work more efficiently	Standardization	Overcomes information separation. Establishes and maintains uniform measurements for quality and quantity. It simplifies buying and selling and reduces marketing costs.
	Financing	Overcomes value, time and space separation. Is meant to bridge the time between the buying of the raw material, producing, processing, storing and transportation and receiving the payment for selling by providing the funds needed for these actions
	Risk bearing	Overcomes time separation. Risk bearing assumes physical (e.g. fire, pests and floods) and market risks (e.g. changes in values or consumer tastes) by assuming the physical and price risks between purchase and sale. Overcome by creating surplus in earlier stages, or borne by organizations and companies.
	Marketing Intelligence	Overcomes information separation. Reduces the level of risk in decision making by collecting, interpreting and disseminating information on prices, inventory levels, embargoes and other incidents that may influence the buying and selling of products.

Source: own elaboration based on explained Beierlein, Schneeberger and Osburn (2008) and Crawford (2006)

We hypothesise that this variety in performance of the different practices is strongly influenced by the diversity of values and motivations of the different actors and initiatives in this research. In other words, the values and motivations of the actors/initiatives are thought to strongly influence the way in which the practices that we listed are performed. We will capture this diversity by taking into account:

- How the different actors define the functions (i.e. what is the purpose of each activity according to each actor). For instance, according to the marketing system approach, processing is “meant to increase the utility for the consumer and thereby increase the value” (Beierlein et al., 2008), whereas in alternative food systems

processing is sometimes meant to allow the valuation of products that would otherwise be spoiled;

- How the different actors see their own role and the role of the other actors in the food system (i.e., according to the actors: what are the relevant actors to be involved in the definition of the functions and what actors should define how they need to be fulfilled). For instance, according to the marketing system approach, financing is "meant to bridge the time between the buying of the raw material, producing, processing, storing and transportation and receiving the payment" (Beierlein et al., 2008), whereas in some cases local authorities decide funding local initiatives because they have a public utility purpose and support salaries or investments. In those cases, financing is a way for local authorities to help restructuring the market.

In order to capture the variety of actual motivations and values, these refinements will be made depending on how the studied actors actually define the various functions (i.e. the purpose they give to these activities), their own role and the role of the other actors in the food system. In this perspective, talking about "activities" rather than "functions" would be more appropriate.

Moreover, as afore mentioned, the core issue addressed by this study is whether and, if so, the agri-food system is evolving, both at local and macro levels, as a result of the interactions between food retailers and local initiatives, and between healthy fast-casual chains and organisations from civil society. This implies analysing not only the way the marketing process is impacted (i.e. how and by whom the nine functions are fulfilled, and its relative importance), but also:

- Analysing how other business functions are impacted (e.g. innovation and marketing);
- Taking into account a broader set of actors (all the actors involved, not only upstream actors) and their practices (e.g. public authorities and their policies, consumers and their consumption patterns, extension ASBLs and their activities).

We therefore take pay attention to not only the actors that are directly involved in the initiatives that we study, but also those that are indirectly involved. We will therefore take into account food retailers, local authorities, farmers, project holders, consumers, NGOs and other partners when appropriate.

In the next section, we will have a more in-depth look at how values will be characterized and classified.

2.3 Values

In the literature, the notion of value is mostly tackled at the individual level.

Values are about what is important for people in their lives, what they will be striving for. Life goals share much conceptual overlap with values and help understanding what people's

aims are and how they organise their lives to reach these goals. Schwartz (1992; 2006) defines six main features for values: they are beliefs that are linked to affect; they point at desirable life goals; they transcend specific contexts (and differ in that from norms and attitudes that are usually linked to specific situations); they serve as guiding principles; they are prioritised differently from one individual to another; and, finally, it is their relative importance that will guide action.

Values and life goals are based as well on internal psychological needs and drives, as on external social models and people experience in life. However, different studies in the field converge to the conclusion that there are only around a dozen values/life goals that are shared by people across the world (Sheldon et al., 2011; Grouzet et al., 2005; Schwartz, 1992). Besides, cross-cultural research shows that the organisation of those values is highly consistent across different cultures.

2.3.1 Intrinsic and extrinsic values and goals

In line with self-determination theory, life goals can be differentiated between intrinsic and extrinsic pursuits. According to Grouzet et al. (2005), **self-acceptance, affiliation, community feeling and physical health** are common **intrinsic** goals. They are related to the psychological needs for relatedness, autonomy, and competence, as explained in self-determination theory (Deci and Ryan, 2000; Ryan and Deci, 2000).

Financial success, image, and popularity form typical **extrinsic** goals aiming at obtaining some external reward or social praise. The search for **power** and **achievement** mentioned by Schwartz (1992; 2006) can also be related to the same category of extrinsic goals.

Other dimensions are also used in the literature to structure the organisation of values, such as the Theory of Value Content and Structure (Schwartz, 1992; 2006). In the Theory of Value, prominent dimensions are ‘openness to change’ (hedonism stimulation, self-direction) versus ‘conservation’ (security, conformity, tradition) and ‘self-enhancement’ (achievement, power) versus ‘self-transcendence’ (universalism, benevolence).

Table 2: Goal Contents, Descriptions, and Sample Items

Goal contents	Description	Sample items
Affiliation	To have satisfying relationships with family and friends	"I will have a committed, intimate relationship."
Community feeling	To improve the world through activism or generativity	"I will assist people who need it, asking nothing in return."
Conformity	To fit in with other people	"I will live up to the expectations of my society."
Financial success	To be wealthy and materially successful	"I will be financially successful."
Hedonism	To experience much sensual pleasure	"I will experience a great deal of sensual pleasure."
Image	To look attractive in terms of body and clothing	"My image will be one others find appealing."
Physical health	To feel healthy and free of illness	"I will be physically healthy."
Popularity	To be famous, well-known, and admired	"I will be admired by many people."
Safety	To ensure bodily integrity and safety	"I will have few threats to my personal safety."
Self-acceptance	To feel competent and autonomous	"I will have insight into why I do the things I do."
Spirituality	To search for spiritual or religious understanding	"I will find religious or spiritual beliefs that help me make sense of the world."

Source: Grouzet et al. (2005:802)

Echoing Schwartz's work, Grouzet et al. (2005) deepened their understanding of life goals by seeking for another fundamental dimension that would complement the intrinsic - extrinsic axis. To this effect, they explored the self-transcendent versus physical dimension. They considered eleven life goals in total to provider a more complete taxonomy of human values (Table 2).

The validity of the first dimension of intrinsic vs. extrinsic goals is confirmed by the analysis. Goals in the intrinsic cluster (community, affiliation, self-acceptance, physical health and safety) are highly consistent with each other and strongly opposed to goals in the extrinsic cluster (financial success, image, popularity and conformity).

The second dimension of caring for one's physical self (safety and health, bodily pleasures and hedonism, financial success as a material means to achieve those ends) vs. looking for dimensions that transcend the self (benefitting society, taking future generations into account, seeking universal meaning and understanding, as well as matching society's desires) demonstrated that the goals were in opposition, but the clusters were not as internally consistent as the intrinsic vs. extrinsic ones.

However, even if the distinction between intrinsic vs. extrinsic types of goals has proven to be more robust, this second dimension remains valid and allows to differentiate within the clusters of intrinsic and intrinsic goals the priority given to physical self or self-transcendent aims.

2.3.2 Intrinsic/extrinsic values and the environment

This distinction established between intrinsic and extrinsic life goals provides thus a fundamental dimension to understand how people's minds are structured. Besides, intrinsic values and life goals are in opposition to extrinsic ones. This means that people are going to give priority either to extrinsic life pursuits such as money, power, image or status; or to intrinsic goals such as having close interpersonal relationships (affiliation), growing as a person, and helping one's community. Not only is it difficult to pursue both extrinsic and intrinsic goals at the same time but also going for one set of values tends to diminish the importance of the opposing set of values. Besides, what is so important with values and life goals is that they determine much of people's attitudes and behaviours. They are at the root of what people do (or don't do) and provide insights on their underlying pursuits.

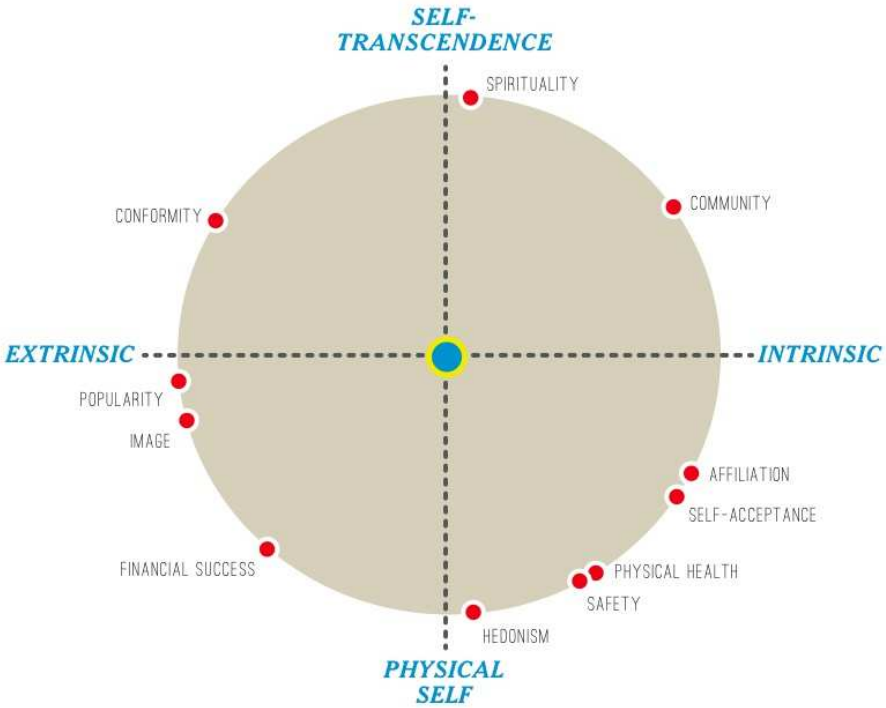
Going for extrinsic or, on the contrary, intrinsic values and goals influences social and environmental behaviour and attitudes.

In particular, extrinsic values and goals are associated with less pro-environmental attitudes and behaviours (see, for instances Brown and Kasser, 2005; Saunders and Munro, 2000; Sheldon et al., 2011). As explained in Sheldon et al. (2011:98):

> (…) studies document that a strong priority placed on money, power, and status is associated with caring less about the environment, engaging in fewer environmentally beneficial behaviors, and having higher EFs [ecological footprints] (…).

Conversely, giving priority to intrinsic values and life goals is associated to more positive attitudes and behaviours towards the environment (Sheldon et al., 2011; Brown and Kasser, 2005; Schultz et al., 2005).

Figure 1: Circumplex Model – Richard Morin/Solutions



Source: Grouzet et al. (2005)
Notes (1): This circumplex model is based on circular stochastic modeling procedures applied to the goal-importance ratings of approximately 1800 college students in 15 cultures. Values adjacent to each other on the circumplex are experienced as relatively compatible whereas values on opposite sides of the circumplex are experienced as in relative conflict.

This has important implications as current approaches to promote sustainability and the protection of the environment often trigger extrinsic life goals related to financial savings, status, image, profit and economic growth. As such, beyond the win-win effects those approaches might bring on the short term, they might, in fact, be encouraging the life goals that are detrimental to more sustainable behaviours. On top of that, priming extrinsic values causes intrinsic values to be relatively suppressed, which, in turn, could well be undermining the very set of life goals at the root of more sustainable behaviours.

Sheldon et al. (2011:103) come thus to the conclusion that:

> (…) when teaching students about environmental problems, curricula should probably avoid focusing on how particular solutions might save money (extrinsic values), and instead connect these solutions with how they will benefit the community (intrinsic values; see, e.g. Vansteenkiste et al., 2004). Similarly, as environmental campaigners and politicians reach out to citizens, these data suggest that it is better to focus on how sustainability policies might help benefit one's family and future generations rather than how they will help the economy grow.

2.3.3 Connectedness with nature

Social identity is also an important aspect of a person's identity. By defining their social identity in terms of gender, race, etc. but also by what they like (music, sports, etc.), their political ideas, and many other aspects, people create the feeling of belonging to what is called an *in-group*. In turn, this creates the sense of an *out-group*, with others that do not share the same characteristics.

As nature is, to some extent, included in the self, the state of the nature becomes related to the person's own well-being. The strong correlation between connectedness with nature and pro-environmental behaviours has been established in the literature (Frantz et al., 2005; Mayer and Frantz, 2004; Schultz, 2001).

Conversely, when nature is an out-group, people see themselves as not being part of nature. In this anthropocentric perspective, there is no overlap between their own self and nature.

This concept that nature can be considered as an out-group with no connectedness to the individual self provides deep insights on why the destruction of other species and ecosystems can take place in relative indifference, let alone the suffering of animals.

These notions have thus major implications when seeking paths to sustainability. When materialistic and self-enhancement values are activated and promoted in people, when animals and nature are consistently presented as an outgroup, when there is a strong anthropocentric perspective, it is likely to move people away from more sustainable paths.

2.3.4 Implications for F4S phase II

The literature review on values shows that values have a fundamental role in shaping sustainable or unsustainable path. They are at the root of people's life goals and actions. As previously discussed, life goals can be organised in a circumplex fashion (Figure 1) with clusters of goals being consistent with each other and opposed to others. The first dimension makes the distinction between intrinsic goals (community, affiliation, self-acceptance, physical health and safety) and extrinsic goals (financial success, image, popularity and conformity). Goals in each cluster are highly consistent with each other and are strongly opposed to the other cluster. In most cases, an individual will thus prioritise either intrinsic or extrinsic life goals.

It has been established in the literature that this prioritisation of either intrinsic or extrinsic values has a strong correlation with environmental attitudes and behaviours. A strong priority placed on money, power, and status is associated with caring less about the environment. Conversely, when individuals prioritise intrinsic values and life goals, research shows that they have more pro-environmental attitudes and behaviours.

In the circumplex organisation of life goals, the second dimension covers caring for one's physical self (safety and health, bodily pleasures and hedonism, financial success as a material means to achieve those ends) vs. looking for dimensions that transcend the self (benefitting society, taking future generations into account, seeking universal meaning and understanding, as well as matching society's desires). When related to sustainability in food systems, this echoes the concept of environmental identity and connectedness with nature. As nature is, to some extent, included in the self, the state of the nature becomes related to the person's own well-being. Conversely, when nature is an out-group, people see themselves as not being part of nature. In this anthropocentric perspective, there is no overlap between their own self and nature.

This has important implications as priming extrinsic and anthropocentric values is linked to caring less about the environment and becoming more indifferent towards nature. But, most importantly, it also causes intrinsic values to be relatively suppressed, which, in turn, reinforces the dominance of extrinsic values even more and further undermines the very set of life goals at the root of more sustainable behaviours.

In line with the researchers in the field, we thus make the hypothesis that a change in values and life goals is necessary to orientate food systems on more sustainable paths. More specifically, this implies to stop priming materialistic, self-enhancing values and to encourage intrinsic and self-transcendent values as well as connectedness with nature.

2.4. Transitions, interactions and learning

As discussed in Section 2.1, socio-technical regimes are characterized by relatively stable configurations and alignments of different cognitive and normative elements, activities and processes, which constitute the underlying assumptions guiding interpretations and actions of regime actors (Geels, 2002; Geels, 2004; Schot and Geels, 2007; Smith et al., 2010). The stability of a regime's underlying assumptions "locks" regimes within path-dependent trajectories, implying that regime changes are rather incremental (Geels, 2004; Schot and Geels, 2007; Marques et al., 2012).

Transitions, however, require deep and broad changes in key components of a regime's basic assumptions, meaning changes on its knowledge base, practices, world views and values, as well as on problem definition and interpretation (Geels, 2004; Schot and Geels, 2007; Smith et al., 2005). Moreover, transitions imply changes both on technical and social aspects of a socio-technical system that go far beyond incremental or trivial adjustments within an incumbent regime. That is why socio-technical transitions are also referred to as system innovations. The development of new values and practices, as implied by system innovations, involves multiple interactive learning processes within and between an incumbent regime and the two other levels that together constitute a socio-technical system – niches and landscape (Geels, 2004; Geels and Schot, 2007; Smith et al., 2010;

Foxon et al., 2010; Marques et al., 2012). This means that all stakeholders need to change through collaborative learning for enabling transitions (Elzen and Barbier, 2012; Marques et al., 2012). In other words, interactive learning required for transitions is a powerful, multi-level and multiple stakeholders learning process.

The centrality of interactions and learning processes for transitions is reflected in the typology of pathways proposed by Geels and Schot (2007). As presented in Section 2.1, this typology is based on the timing and nature of the interactions between the different levels, particularly niche-regime interactions. The timing dimension refers to the level of development and stabilisation of a niche innovation when interacting with the dominant socio-technical regime. A key indicator of the level of development of a niche innovation is whether a dominant design has been stabilised by learning processes (Geels and Schot, 2007; Marques et al., 2012).

Despite being at the heart of transition theory, interactive learning between different actors from the different levels is only vaguely defined and operationalised in most of the conceptual and empirical studies on sustainability transitions. Moreover, the great bulk of scholarly work on the topic focuses largely on learning dynamics at the niche level (Armitage et al., 2008; Elzen and Barbier, 2012). In fact, as discussed in Section 2.1, niches are conceived as protected learning spaces (or 'incubation rooms'), where radical innovations with potential for triggering transitions of socio-technical regimes can flourish (Geels and Schot, 2007; Marques et al., 2012). However, interactive learning processes for transitions have to go beyond such protected learning spaces, and involve, for instance, powerful regime actors such as multinational corporations. As claimed by Elzen and Barbier (2012:18), "the dynamics of system innovations also implies that niche developments should tie into regime developments in order to have a wider impact."

Thus, the aim of the present research is to analyse whether the various interactions we investigate in our case studies impact the knowledge basis, practices and values of actors of the agri-food system in Belgium. More specifically, we focus on large food retailers, farmers, consumers, local authorities and project holders of local initiatives. Our approach aims to make a contribution to face this analytical (and theoretical) challenge by using insights from the business management literature on organisational and inter-organisational learning. The purpose is to identify and discuss aspects and dynamics of learning processes at organisational and inter-organisational levels that can favour or hinder sustainability transitions in the context of niche-regime interactions. In other words, we look at changes in values and practices through the lenses of learning.

2.4.1 Organisational knowledge and learning

The notions of organisational and inter-organisational learning are closely related to the very concept of knowledge, and are guided by the assumption that knowledge is at the core

of organisations' competitive advantage (Cross and Baird, 2000; Ingram, 2002; Levinthal and March, 1993; Tsoukas and Vladimirou, 2005). It is widely accepted that adaptation, growth and survival of an organisation depend on its ability to learn and acquire knowledge (Cross and Baird, 2000; Ingram, 2002; Levinthal and March, 1993; Pavitt, 2002; Tsoukas and Vladimirou, 2005).

The definition of organisational knowledge departs from the broader epistemological discussion about what is knowledge and how it differs from mere information. Knowledge involves cognition and is closely connected with action; it presupposes "interpretations within a domain of action" (Tsoukas and Vladimirou, 2005).

Within the knowledge management field, knowledge is classified in different ways. One of the most important distinctions is made between tacit and explicit types of knowledge (Levitt and March, 1988; Nevis et al., 1995). The concept of tacit knowledge was originally introduced by Polanyi (1966) to refer to a form of knowledge that is non-codified, intuitive, hard to define, and largely based on experience (Frost, 2010; Levitt and March, 1988; Pavitt, 2002). Hence, tacit knowledge "is often context dependent and personal in nature. It is hard to communicate and deeply rooted in action, commitment, and involvement" (Frost, 2010). Tacit knowledge includes cultural beliefs, values, attitudes, mental models; as well as skills, capabilities and expertise (Frost, 2010). Explicit knowledge, on its turn, is codified and formalized through, for example, documents, memos, notes and databases (Frost, 2010). Organisational knowledge can also be distinguished on the basis of its embeddedness: it can be embedded in products, processes, structures, artefacts, routines, practices, or organizational culture (mostly explicit knowledge), and embodied in organizational members' minds (mostly tacit knowledge) (Argote, 2013; Nevis et al., 1995; Pavitt, 2002).

2.4.2 Organisational learning as a collective process

One important debate in field of organisational learning is about knowledge and learning at the levels of individuals and organisations. Learning theories assume that learning takes places in the human mind only, implying that knowledge is closely connected with human action (Holmqvist, 2003; Tsoukas and Vladimirou, 2005). This assumption leads to a debate on whether the ability to learn and the anthropomorphic characteristics associated with it can be attributed to organisations (Mariotti, 2012). Despite this dispute over whether organisations have "minds" that would enable them to learn, there exists a consensus among the different organisational learning scholars that cognitions and actions of individual members are important for learning at the organisational level.

The acknowledgement that individual members are agents of the organisational learning process is related to another widely accepted assumption borrowed from epistemological studies that knowledge has a social life (Tsoukas and Vladimirou, 2005). Knowledge is

created through a social and consensual (learning) process of information processing and interpretation (Nevis et al., 1995; Tsoukas and Vladimirou, 2005). Organisational learning is, therefore, a collective process of knowledge (Nevis et al., 1995; Tsoukas and Vladimirou, 2005). On their work on organisational knowledge, Tsoukas and Vladimirou (2005:973) "take on board Polanyi's (1966) insight concerning the personal character of knowledge and fuse it with Wittgenstein's (1958) insight that all knowledge is, in a fundamental way, collective"; and show "how individuals appropriate knowledge and expand their knowledge repertoires, and, on the other hand, how knowledge, in organized contexts, becomes organizational[1]" (Tsoukas and Vladimirou, 2005:120).

New organisational knowledge, and associated new routines, values and practices[2], are encoded, integrated, stored and maintained in a collective or organisational memory; once embedded in the organisational memory new knowledge becomes institutionally available and can be generalised to new situations, despite the turnover of individual members and the passage of time (Levitt and March, 1988; Nevis et al., 1995). This means that thought individual members are essentials for the collective learning in organisational context; organisational learning is somehow independent of them.

2.4.3 Organisation change and learning loops

Organisational learning is a collective process for organisational change, through which new knowledge is created. It is widely accepted that changes in an organisation are related to changes on its knowledge base, that are reflected on changes in practices, routines, beliefs and other cognitive elements on which knowledge is embedded on; as well on changes in behaviours, procedures and strategies (Argote, 2013). Of course inside an organisation, and

[1]Tsoukas and Vladimirou (2005:120) define individual knowledge as "the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both" and organizational knowledge as "the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings."

[2] It is worth mentioning that there exists certain confusion in the use of the concepts of knowledge, routines and organisational memory. Some authors seem to use the two concepts as synonymous, by suggesting, for instance, that knowledge is embedded in routines (Argote, 2013); others seem to equal routines to knowledge, by indicating that routines along with knowledge is recorded in the collective memory of an organisation (Levitt and March, 1988). In fact, this leads to another conceptual impression found in the literature on organisational learning, to wit whether knowledge encompasses routines, or routines encompass knowledge: routines are eventually seen as narrower than knowledge, being a procedural type of knowledge (Argote, 2013); while in other studies routines are used as broader concept than knowledge, including, in addition to knowledge, technologies, cultures, rules, codes, procedures, conventions, beliefs, strategies, frameworks and paradigms that guide organisations actions and behaviours (Levitt and March, 1988). Moreover, organisational memory is sometimes considered as a sub-process of the organisational learning, referring to the institutionalisation or embededness of knowledge within an organisation (Nevis et al., 1995). Similarly, the literature on innovation management defines routines as "activities developed to undertake essential tasks" (Pavitt, 2002). According to Nelson and Winter' (1982) evolutionary theory of the firm, routines are regular and predictable behavioural patterns that guide an organisation's activities and structure its memory, representing a disciplining mechanism of organisational behaviour, and providing heuristics for problems solving and innovation (Mariotti, 2012; Pavitt, 2002). In order to avoid this conceptual trap, and better frame the discussion of transitions in our our case studies, we use the concepts of knowledge, practices and values as sinonimous of the broad definition of routines, which can be recorded at organisastional level.

in a network of organisations such as an agri-food system, learning processes are continuously, and mainly incrementally occurring. However, as afore discussed, the type of learning that can enable a socio-technical transition is far more radical than such incremental learning.

In order to understand what type of organisational learning can lead to sustainability transitions, we borrow elements of the social learning theory and its discussion of learning loops. Social learning theory of action brings important contribution to understand organisational change. Social learning processes consist of four dimensions: governance, intention, action and outcomes. Congruencies, or in-congruencies, between intention and outcomes prompt changes in action [practices] and intention [underlying values], and/or development of innovative governance norms and protocols (Anderson, 1997; Armitage et al., 2008). Those changes correspond to three loops of learning, which are referred to as single, double and triple loop learning, respectively.

Flood and Romm (1996) see the three learning loops as three alternative discourse arenas or centres of learning, which make the basis for actors' decision-making process. These alternative discourses can be seen as the following questions of: 1) "are we doing things right?" (design-based arena); 2) "are we doing the right things?" (debate-based arena); and 3) "is rightness buttressed by mightiness and/or mightiness buttressed by rightness" (might-right arena) (Flood and Romm, 1996:594).

Single loop learning is mainly focussed on the first discourse arena, guided by the obsession of finding the best means (action strategy) to meet a particularly (intended) outcome (Food and Romm, 1996). In terms of changes, it refers to incremental or corrective changes in practices, improving what is already being done, being therefore related to efficiency (Armitage et al., 2008; Levitt and March, 1988; Nevis et al., 1995). It "typically involves the identification of alternative strategies and actions (…) to resolve specific problems and improve certain outcomes (…)" (Armitage et al., 2008:88). Hence, single loop learning corresponds to ordinary learning based on experience, which leads to the stability of practices Levitt and March, 1988). In terms of transition theory, single loop learning would be associated with the stability and lock-in of regime actors' cognitive patterns.

Double loop learning involves "looping" around between the design and the debate arenas (Food and Romm, 1996). It corresponds to discontinued changes resulting from examination and adjustments of basic values underlying what is being done, implying more prevalent and transformational changes (Armitage et al., 2008). Double loop learning "occurs when existing worldviews and underlying [embedded] values are challenged (…), resulting in fundamental changes in stockholder behaviour [action]" (Armitage et al., 2008:87).

Triple loop learning, by its turn, has three centres of learning: design, debate and might-right learning arenas (Food and Romm, 1996). It corresponds to improvements in the

capacity of an organisation to engage in single- or double-loop learning (Armitage et al., 2008:89). By bringing together the three questions, triple loop learning brings awareness to decision-making process, and avoids the lock-in learning around a dominant discourse [power issues]. Ideally, triple loop learning implies that actors "operate with awareness that there are alternative ways of addressing 'situations'" (Food and Romm, 1996:601).

We put forward the hypothesis that ***double loop learning (in an early stage of a transition pathway) and triple loop learning are the types of learning needed for a transition to occur, as they can deeply impact the knowledge bases, values and practices of all stakeholders within a socio-technical system***. Through the case studies of niche-regime interaction, we will look for evidences that may suggest whether and how such powerful learning processes can occur, enabling more sustainable food and agricultural practices to scale up and spread. It is worth mentioning, however, that such forms of learning process involve changes that take a long period of time to consolidate (Armitage et al., 2008). Our analysis is hence limited by the fact that it is based on case studies of on-going interactive niche-regime learning processes, which full impact in terms of changes in values and practices can only be fully comprehended in the long term.

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