

Redefining power relations in agrifood systems

Adanella Rossi^a, Sibylle Bui^{b,1}, Terry Marsden^c

^a Department of Agriculture, Food and Environment, University of Pisa, via del Borghetto, 80, 56124 Pisa, Italy, adanella.rossi@unipi.it

^b INRA Ecodéveloppement, 228 route de l'aérodrome. CS 40509. Domaine St Paul - Site Agroparc. 84914 Avignon, France, sibylle.bui@uclouvain.be

^c Sustainable Places Institute, Cardiff University, 33 Park Place, Cardiff CF10 3BA, Wales, UK, MarsdenTK@cardiff.ac.uk

Abstract

Reconfiguration of power relations is crucial to transformations in agro-food systems. In this paper, we propose a conceptual basis for understanding this relation, building on the approaches to power of transition studies and other strands of studies. We explore the conditions for reconfigurations to occur by analysing three cases, concerning participatory plant breeding in Italy, public food procurement in France and diversification of agrifood chains in Wales. We highlight the critical importance of creating enabling relational environments, where power reconfiguration can occur. Within this new configuration, new, diverse sources of power are mobilized and new practices and institutions are co-constructed and legitimised, establishing the conditions for new socio-technical trajectories to emerge and for further transformative potential to develop. Our results show that a more variegated and dynamic configuration of power relations is needed. Transformations of agrifood systems depend on the variety of interactions that, in a multi-scale and dynamic dimension and through the play of the different forms of power, may develop among the actors involved. Understanding these processes and the implications that they show in terms of governance is critical.

Keywords

Agrifood system, power relations, sustainability transitions, innovative power, transformative power, power reconfiguration

1. Introduction: agrifood governance and power relations

It is widely recognised that complex power dynamics affect the governance of agrifood systems, by influencing material and immaterial spheres such as technology, regulatory frameworks, markets, and discursive arenas. During the development of the global agrifood system, traditional governance structures were reconfigured and ‘big players’ – transnational agro-industry and retail corporations – occupied an increasingly major role (Clapp and Fuchs, 2009). Following their market logic and creating conditions for maintaining their supremacy, these players have also influenced the public power domain. Over time,

¹ Current affiliation: Université Catholique de Louvain, Centre for Philosophy of Law (CPDR), SSH/JURI/PJTD – L2.07.01, Collège Thomas More, place Montesquieu 2 (box 15), B-1348 Louvain-la-Neuve, Belgium

however, in the context of evolving global-local dynamics and re-articulation of forms of power, this reconfiguration has not emerged as so linear and unidirectional and has rather shown an increasing complexity (Fuchs and Glaab, 2011; Avelino and Wittmayer, 2016).

The issue of the reconfiguration of power relations has been further foregrounded in the context of the growing need and demand for new norms in the politics and practices of agrifood systems, to solve ecological, ethical and health shortcomings of the dominant model. Indeed, sustainability transitions are long-term processes of transformative changes involving a broad range of actors and shifts in power (Rotmans and Loorbach, 2010). Understanding how power relations may be transformed is thus crucial. In the dynamics involving power that characterise transition processes, the role of civil society and of new alliances around food is considered particularly critical as a source of innovation and potentially a new structuring force. In recent decades, alongside the pressure of food movements engaged in global advocacy actions, innovation processes at the micro scale in local-regional contexts have been recognised as capable of introducing new challenges and potentialities (Seyfang and Smith 2007; Little et al., 2010; Seyfang and Haxeltine, 2012; Elzen et al., 2011; Renting et al., 2012). While there is a general consensus about the role still played by national and international politics as a necessary battleground for sustainability transitions, the spatial politics of transition (Castàn Broto, 2016) and associated experiences of local reflexive governance are considered interesting spaces of experimentation of innovative pathways, creating democratic conditions to change agrifood systems (Marsden, 2013; Constance et al., 2014). The significance of these processes and of their potential in terms of power issues is widely acknowledged; however, much still needs to be understood, as the literature on alternative food networks/local food systems does not purposefully tackle power issues.

This paper thus aims at contributing to a deeper understanding of power dynamics in the transition to more sustainable food systems. To that end, it explores three sets of potentialities: (i) the mechanisms underlying the reconfiguration of power relations, looking at spaces of experimentation where this occurs; (ii) the transformative potential of reconfigured power relations, that is how changes in power relations may contribute to comprehensive reshaping of institutions and practices around food; and (iii) the ways and the degree to which these reconfigurations may lead to broader change, affecting the dominant system of institutions and practices. We develop this analysis in three empirical domains which are significant in terms of evolution of power relations: the participatory approaches to plant genetic resource management in Italy, the organisation of public local food procurement in the Biovallée in France, and the diversification in agrifood chains in SW Wales, UK.

The paper develops as follows: in section 2, we present the lens we have adopted to examine power reconfiguration in innovation processes within agrifood systems, drawing on transition theories combined with insights from other strands of studies. The analysis of the empirical domains follows in section 3, exploring the three above-mentioned sets of potentialities. Section 4 presents an overall analysis of the elements emerged and section 5 draws our key conclusions.

2. Understanding power dynamics in transitions

The literature on the role of power in the transformative changes leading to sustainability transitions of agrifood systems has developed hand in hand with the re-articulation of power structures. These have evolved from an initial dominance of big players to a more variegated and evolving picture where new dynamics develop between global and local forces, alternative/oppositional pathways emerge and are continuously reshaped, and new actors and different forms of powers emerge (Fuchs and Glaab, 2011; Constance et al., 2014). Tackling this increasing complexity has required overcoming the traditional political economy approach, towards a post-structural approach (Le Heron, 2007) and, following the perspective opened by Gibson-Graham (1996, 2006), an increasing recognition of the presence of different economic logics (non-capitalist, not exclusively market-led) which inform alternative pathways at micro scale. Other perspectives from sociological and geographical studies (actor network theory, convention theory, practice theory, social movement theory, etc.) have further enriched the study of these complex scenarios and their transformative potential, highlighting other influencing factors (human and not-human) and dimensions (spatial, social). These multiple perspectives allow embracing the multi-actor processes of negotiation of meanings and claims, the development of (collective) agency, and the spatial dynamics

where new actors and new forms of power interact in novel spaces of governance. In general, the diversity of contexts and the complexity of actors' interplay are central elements in the analysis of innovation processes (including transition to sustainability), allowing to grasp the many nuances of changes and their potential (Constance et al., 2008; Rosin and Campbell, 2009).

Among the existing theoretical-analytical approaches, transition studies², in their diverse perspectives and progressive enrichment through integration with other disciplines, have devoted growing attention to power-related issues to account for the complexity of change processes (Avelino and Wittmayer, 2016). Thanks to their comprehensive approach, they have been intensively adopted to investigate grassroots innovations developing at the micro scale, their interplay with consolidated frames and the associated transformative potential (Seyfang and Smith, 2007; Seyfang and Haxeltine, 2012; Elzen et al., 2011).

Power relation issues are inherent to transition theories, starting from the Multi-Level Perspective (MLP) (Geels, 2005; Geels and Schot, 2007), based on the dynamics among three levels of structuration - the exogenous pressures of landscape, the dominant institutions and practices of regimes, and the innovative approaches of niches. This heuristic has evolved over time (Geels, 2010 and 2011; Smith and Raven, 2012; Geels, 2014) but still builds on the existence of consolidated structures and forms of power, informing socio-technical and governance systems, and spaces of innovation which seek alternatives and aim at transformation. The need to deal with the role of power more explicitly has led to further refinements in this framework, leading to a better understanding of agents' power profiles, agency distribution, dynamics between different forms of powers, power shifts among actors, political ontology and territorial spatiality of transition politics (Avelino, 2011; Elzen et al., 2011 and 2012; Hoffman, 2013; Geels, 2014; Castàn Broto, 2016; Avelino and Wittmayer, 2016; Avelino et al., 2016)).

The integration of transition theories with other disciplines and approaches - such as practice theory, institutional theory, actor-network and social movement theory - has also proved fruitful. Similarly to other strands of studies which question a dichotomous approach to developments in agrifood systems (e.g. the exhortation to move beyond conventionalization and dual structure-based bifurcation of organics, and to investigate the more diversified processes taking place at the local scale (Constance et al., 2008; Rosin and Campbell, 2009)), this enrichment of perspectives has led to less sharpened identifications of regimes and niches, seeing them as interacting fields of different forces. Elzen et al. (2011; 2012), for instance, abandon the traditional hierarchical representation of these fields of forces, visualising their reciprocal conditioning in their more dispersed nature and through articulated forms of interaction. Avelino and Wittmayer (2016) distinguish between 'reinforcive, innovative and transformative power' - aimed respectively at consolidating existing institutions, developing new resources and promoting new institutions - and question the idea of dominance of regimes on niches, pointing out how it is rather a question of different types of power and of interactions between top-down and bottom-up dynamics.

The in depth study of the interactions among different actors and related sets of power, interests and goals has found an effective tool in the "anchoring" notion, adopted by Elzen and colleagues (2012) to explain the conditions that allow innovations to develop and consolidate, in a niche or in the regime through niche-regime interactions. According to this mechanism, innovation may occur through integrated changes involving components of network, technological and institutional nature (referring respectively to relationships around innovation, definition of technical elements, and cognitive, normative and economic rules). As often highlighted, the dynamics of change that develop for each of these components and their interconnections mirror significant changes in terms of power. Within the niche-regime interactions, these processes are considered instrumental to the 'translation' of innovation (Smith, 2007), where the adoption of innovation at larger scale occurs through a process of reciprocal conditioning, thereby entailing power reconfiguration. These dynamics are linked to processes which lead to 'appropriation' or capture of innovation, and their associated meaning. Again, the approach here is that of capturing the inner mechanisms associated with the different powers that develop among the involved stakeholders, considering these processes as part of the dialectic relations through which the parties contribute to the development of innovation, from its experimental dimension to its spreading at a broader scale. As other studies on processes of change in agrifood systems have stressed, the results of these interactions depend

²Transition studies are aimed at understanding broad and deep socio-technical transformations, including, but not limited to, agro-food systems.

on diversity and contingency (Constance et al., 2008) and so on the specific dynamics that develop around the innovation in the local contexts (Forney and Häberli, 2016).

Other studies on power dynamics that shape agrifood governance and practices have explored the role of different, interrelated types and sources of power, and their variegated and evolving distribution among the actors involved. They are a useful complement to transition theories. Fuchs and Glaab (2011) have pointed out the presence of (i) material sources of power, such as economic and technological resources, which generate market and political-institutional power, and (ii) ideational sources of power, such as legitimacy or knowledge, where power is related to the symbolic meanings of practices and institutions and to their normative dimension. Legitimacy, embedded in social structures, is at the basis of actors' discursive power and reframing ability. These last forms of power, informing the normative approaches driving policies and practices (such as those aiming at sustainability, social justice and democracy) have important implications on agrifood governance for transitions at global and local levels³. Knowledge, in close interaction with legitimacy, is another important source of power. Knowledge building and management, and the associated relation among different forms of knowledge (e.g. scientific and experiential) can mirror significant power struggles or, alternatively, power reconfigurations (Bruckmeier and Tovey, 2008). In the latter, knowledge building, conceived as the fruit of collective, situated practices, sees social actors cooperate in reshaping knowledge for joint purposes. This process leads to new collective identities, vision and agency, and supports empowerment and development of greater autonomy of actors in situations of subordination and deprivation in terms of decision power, skills and control on production factors⁴. As such, it appears as a pre-condition to creating alternative agrifood models. Developing a common understanding and new shared knowledge within learning networks and through interplay among different knowledge holders is considered as central in processes of development and spreading of innovation in agriculture (Knickel et al., 2009; EU SCAR 2014). In transition studies, this applies both to the niche level, where new relation systems allow defining the new values, norms and rules underpinning innovative practices, as well as to the niche-regime interactions, where it stresses the role of facilitation in stimulating the needed interactions (Ingram et al., 2014; Elzen et al., 2012; Kilelu et al., 2011).

The dynamics that can develop between the material and symbolic forms of power⁵ and the specific features they assume in relation to social settings (Arora and Glover, 2017) appear extremely significant when analysing power issues. The interplay that can develop among different scales where these powers show (for example reframing power that acts at the micro scale but is able to translate into institutional power at higher scale) makes these dynamics even more complex.

We believe that the combination of all these perspectives constitutes an effective framework to deal with power issues in agrifood systems. In this paper, so, we draw on transition theories, in their various and adapted developments, but also refer to and incorporate insights from the above-mentioned perspectives when useful. It is within this integrated framework that we analyse the initiatives that constitute our empirical domains. We focus on the processes by which these initiatives carry out their innovation, interact with elements of the mainstream socio-technical system, and indirectly or purposely influence it at larger scales. We pay special attention to the role that reconfiguring power relations plays in these changes, looking at the different types of power exercised by the actors, their evolution and effects.

3. The observation arenas: exploring pathways of transformation

The three experiences we analyse are dynamic pathways, where power issues are crucial and where the evolutionary dimension allows following the process of change in power relations. The authors have been

³ This echoes the emphasis placed by other studies on the different ethics that inspire alternative pathways around food, on their capacity to exercise pressure on institutions and on their transformative power (Forney and Häberli, 2016; Elzen et al., 2011; Seyfang and Smith, 2007).

⁴ Many scholars have stressed these issues by analysing the processes which redefine the role of farmers/agriculture (van der Ploeg, 2008; McMichael, 2012), as well as the mechanisms of consumer impoverishment or (re-)empowerment (Jaffe and Gertler, 2006; Stevenson, 1998).

⁵ For example, economic power that generates discursive power, or reframing power that generates institutional power.

conducting longitudinal research on each of the initiatives; they thus reconsider their earlier empirical work in light of the themes of this paper.

As stated earlier, the experiences are described and analysed according to the following three sets of potentialities, namely: (i) the mechanisms underlying the reconfiguration of power relations; (ii) the transformative potential of reconfigured power relations, that is the way changes in power relations contribute to reshape institutions and practices; and (iii) the ways and the degree to which these reconfigurations may lead to broader change, able to affect the dominant institutions and practices.

Each of the first two experiences refers to a specific initiative, which is analysed in depth; the third one deals with the process of reorganisation of a few food supply chains in a well-defined territory, complementing with a more transversal (consequently less detailed) analysis the other two.

3.1. Re-appropriation of the genetic foundations of food: wheat-based value chains in Italy

Participatory approaches to plant breeding and genetic resource management (Ceccarelli et al., 2009) are challenging the established mainstream system and are at the basis of significant initiatives of agrifood innovation. The case of the cereal sector, in particular of wheat-based value chains, is emblematic in this regard. We here consider the Italian context, which is experiencing a blooming of this kind of initiatives.

3.1.1. Reconfiguration of power relations

European agricultural policies and agro-industrial marketing strategies have strongly influenced the development of the wheat sector. High productivity and standardisation logics have conditioned farming practices and the quality of wheat-based food products, while farmers have increasingly experienced a lack of autonomy and economic unsustainability. In this context, at the end of the 1980s, wheat value chain actors, researchers and other actors engaged in sustainable farming started seeking alternatives to this situation and cooperating to that end.

Many cereal farmers started reorganising their activities, turning to organics and shortening their chain. In some cases, they introduced on-farm processing and direct selling; in others, they started cooperating with artisanal rather than industrial food manufacturers, who shared similar economic challenges. A rising awareness of the nutritional and health deficiencies of industrial cereal-based foods accompanied these processes. The search for better quality became a concern for both producers and consumers. Within this process, the lack of varieties suitable for organic farming⁶ and carrying superior nutritional and health properties led some farmers to start experimenting with old varieties, initiating their reproduction and informal dissemination. This kick-started a significant process of re-appropriation and sharing of knowledge and skills, giving farmers a more empowered position with respect to their passive role in industrial supply chains. The development of relationships among farmers has been a meaningful component of this process. The need to modify processing techniques has been another important opportunity to develop new shared competencies and collective agency, leading farmers, millers, bread/pasta makers to new, closer interactions. The shortening of the chain and the need to communicate the special quality attributes of final products have further favoured reconnection and empowerment. Farmers and small-scale processors, marginalised in the industrial production system, have acquired a new visibility and recognition for their role.

The parallel development of new visions and approaches by some representatives of the scientific community and organisations engaged in advisory and advocacy activities have been decisive in this grassroots mobilisation around wheat and derived products. This is the case with some geneticists and agronomists convinced of the need to consider genetic resource management as a matter which goes beyond the pure conservation perspective and that envisages a direct, active engagement of the involved actors - starting from farmers. The establishment of a peer-to-peer relationship between scientists and practitioners has deeply affected the development and spread of the innovation.

⁶ The mainstream seed system and the associated regulatory system are inadequate for the organic sector. Indeed, the standards established for varieties to be certified (distinctiveness, uniformity and stability) do not meet the characteristics of the organic crops.

Civil society organisations (CSOs) committed on practical and political levels to sustainability and biodiversity have played another pivotal role in this process of re-empowerment. While supporting on-farm experimentation and fostering interactions, they have created occasions to bridge different worlds - scientists/practitioners, micro/macro levels of action, production/consumption, production systems/movements. Overall, they have created the common framework (sharing meanings, approaches, goals and narratives) which underlies the activities of all stakeholders. This is the case, in Italy, of *Rete Semi Rurali* (RSR) which has since the mid-2000s played a prominent role in networking, participatory research, communication, advocacy, lobbying, at different scales (local, national, international) ⁷.

The so-developed system of equal and collaborative interactions has given new legitimacy to the role of farmers and of all the other value chain actors (including consumers), resulting in a more general rebalance of power. This has allowed the emergence of the different needs and goals and their management by effectively mobilizing all the resources available for change and collectively addressing the related difficulties - from technical to legal aspects. The integration of diverse sources of knowledge - experiential and scientific knowledge, political awareness and institutional-legal expertise - and the new, shared learning stemming from interaction have been particularly significant to that end.

3.1.2. From reconfigured power relations to redesigning agrifood systems

These rebalanced relationships have supported, at the local scale, the reorganisation of the wheat-based value chain which have led to the development of on-farm systems for variety selection and seed circulation, production systems based on these varieties and short circuits of market valorisation of derived products. Within this enabling environment, the actors involved have managed the changes needed to re-design the whole system, tackling technical-technological, organisational, economic as well as cultural, institutional and legal aspects:

- the availability of adequate genetic material, by increasing the availability of seeds from suitable varieties and fostering their circulation;
- a shared re-definition of the quality of these varieties and the derived products, based on shared ecological and social criteria, such as resilience, environmental sustainability, health;
- the re-definition of production technology (through mobilisation of new knowledge, expertise, techniques, equipment), adapting it to the variety characteristics and to the desired quality of final products;
- a proper management of the qualitative attributes of varieties and food products, through suitable tools and arrangements along the supply chain (norms and rules, codes of practice, protocols, protection from misappropriation);
- appropriate marketing and communication strategies to convey and share the meaning of these initiatives and the values embedded in their final products, so creating conditions for the sustainable management of these genetic resources.

This process has been facilitated by CSO actions aimed at favouring networking, information exchange, interaction, and awareness and capacity building. This has led to the development of a shared pool of knowledge and a common narrative, creating conditions for individual development and a more incisive collective action.

Despite the small scale of action, the changes triggered through these processes are significant. They are mirrored in the associated narratives, expressing the reframing power that the involved actors have developed. Regaining control on genetic resources management and meeting the need for more resilient, locally embedded crop systems are recognised as a first important step in building sustainable and socially-based food systems. Moreover, the awareness of being engaged in counteracting the corporate dispossession of germplasm and related knowledge and practices (Kloppenborg, 2010) has assigned an important political dimension to these changes, linking them to the struggles in the political arenas (Bocci, 2014). The will to regain control on food quality, directly involving citizens-consumers, is also important in this process of re-empowerment and “re-appropriation”. The development of this integrated vision has

⁷ RSR is a second level organisation counting 40 member associations (www.semirurali.net).

contributed to strengthening the legitimacy of participatory approaches to genetic resource management and positioned them into broader narratives of commitment to food system sustainability and food sovereignty.

Summing up, the fair, peer-to-peer interaction among actors and the growing collective reflexivity and agency lead to a redefinition of significant elements related to power domains: technology control - for the capacity to reshape it; economic power - for the capacity to create alternative crop-food systems and markets; power associated to institutional-legal-political issues - for the capacity to handle them and to press and arrange for more adequate solutions; power stemming from knowledge and legitimacy, linked to the just mentioned forms of power but also embodied in discursive power and reframing ability - for the capacity to influence normative codes and bringing to the fore new goals (resilience, autonomy, fairness, resource accessibility, food democracy and sovereignty).

3.1.3. Triggering broader change

Despite the embeddedness of these grassroots initiatives in well-defined socio-ecological systems, the effectiveness of the transformation they promote is linked to the possibility to expand and find adequate recognition and institutionalisation, in order to trigger broader changes. This means forcing the power system which limits or hampers this possibility. The networks involved have worked on this, acting at different scales (local to international) and domains (legal issues, knowledge systems, market, cultural and normative frames), with different but significant results.

The seed legislative framework has been a first crucial arena. It currently mirrors the mainstream approaches towards genetic resources (homogeneity, stability) and their management (intellectual property rights). Within this hindering environment, CSOs have committed to spread their alternative approaches and stimulate changes at the institutional-judicial level. In connection with other similar networks in Europe, RSR has carried out international advocacy and lobbying actions around seeds and agrobiodiversity (Bocci et al., 2014), while also working locally, by establishing relations and cooperating with national and regional authorities in conceiving, designing and implementing agrobiodiversity policies more conducive to a dynamic and collective management⁸. This is the case with the definition of a national regulatory framework on 'conservation varieties'⁹ and of regional laws to manage this material. Overall, these actions have significantly contributed to the recognition of farmers' role in seed production-circulation and, as in the rest of Europe, have triggered an evolution of how agrobiodiversity conservation and management are conceived: *in-situ*/on farm conservation has emerged alongside *ex situ* strategies as a dynamic rather than static strategy, more suitable for a more inclusive, collective management of genetic resources in a given territory. This change is meaningful in terms of potential reconfiguration of power relationships.

Another opportunity in this direction has been recently offered by a temporary derogation to the current seed marketing regulation¹⁰ (2014-2018, further extended to 2021), aimed at assessing the feasibility of registration, on-farm production and marketing of seeds from so-called heterogeneous genetic materials¹¹. This opening in the legislative framework, also a result of CSOs' lobbying, is of great significance, as it has legitimised the grassroots research-experimentation on genetic resources and has recognized the value of plant diversity instead of uniformity. In Italy, the implementation of the derogation has been accompanied by a constructive relationship established with seed certification authorities (CREA-DC), especially involving RSR. The engagement of this institution is meaningful, as expression of a new, promising relationship between grassroots innovators and public institutions¹², and for the relevance of the change imposed by the different management of genetic resources - the evaluation of diversity constitutes a disruption of consolidated cognitive and normative frames and procedures.

⁸ Since 2016 RSR is part of the Seed Commission of the Ministry of Agriculture.

⁹ N.L. 46/2007.

¹⁰ Commission Implementing Decision of 18 March 2014 (2014/150/EU).

¹¹ These refer to populations which are characterised by a high level of genetic diversity, being a mixture of many different genotypes. Their phenotype can evolve over time, adjusting to the different agro-climatic conditions.

¹² In 2018 the Italian authorities delegated RSR to manage the relations with the European Commission with regard this experimentation.

Catching this legal opportunity, some evolutionary populations were registered and some farmers were authorised to their production or also marketing. Besides the practical benefits offered by adaptability and thus greater resilience of crop systems, this genetic material is meaningful in terms of empowerment of farmers and local production systems, as it is less suitable to be managed by conventional, formal seed systems. The legal space created has so boosted initiatives aimed at co-designing and demonstrating the feasibility and benefits of local systems of seed production-circulation (Rossi et al., 2018). In three regions the experimentation on this alternative model has also obtained funds from local rural policies, with consequent growth in visibility and legitimacy. The implementation of this model also brings other crucial aspects to the fore, such as the need for proper institutional-legal arrangements to guarantee open-access to the heterogeneous genetic material, while protecting it from misappropriation. Furthermore, the long-term sustainability of these alternative seed systems requires addressing the problem of how to continue to provide the needed research, advisory and facilitation activities, highlighting the need for suitable support policies building on context-based resources and processes. Indeed, fostering an innovative approach to agrobiodiversity management has raised significant questions, challenging established powers, frames and procedures.

Changes in other domains allow for synergistic effects. The growth of interest by the wider scientific community in participatory, locally- and diversity-based approaches to agrobiodiversity management is illustrative in this sense: numerous research projects are contributing to consolidate methods and approaches, while increasing legitimacy and visibility of the grassroots innovations. Amplified by scientific studies and media, the impact on the public opinion and market is remarkable as well. There has been a considerable growth in awareness of the health problems associated with cereal-based food derived from the use of high-bred varieties and industrial processing technology as opposed to the benefits granted by varieties selected and processed in more traditional ways. The potential of this growing demand has been promptly caught by the marketing strategies of the food industry and by seed companies, which have begun to show interest in the traditional varieties and to redirect part of their research on local adaptability and nutritional properties.

The change in practices and institutions triggered by these initiatives is however not without difficulties, due to the persistence of established systems of power. This is clear in several domains, such as the legal one, which shows the complexity of a radical change. The alliance with public institutions is weakened by mechanisms of pathway-dependence which constrain innovative approaches into overly institutionalised procedures and conventional approaches. The dominant seed system is showing its resistance to change too: the interest manifested by most seed companies essentially responds to conventional marketing logics and is aimed at maintaining market power. The growing interest by the agrifood industry may pose a further threat: its huge capacity to appropriate symbolic capital and use it instrumentally may neutralize the effort to highlight the values embodied in small-scale, biodiverse products. The effect of this discursive power and reframing ability on narratives and consumption practices is already evident. A few weaknesses emerge also with regard to the reorientation of research: some difficulties emerge in catching the multidimensional significance of these initiatives, with a consequent focus on specific aspects of the innovation. This specialised and reductionist approach is accompanied by unwillingness or incapacity to adopt participatory and transdisciplinary approaches. The de-institutionalisation, democratisation and decentralisation of research (Pimbert, 2006; Bocci, 2014) appear still far from being implemented extensively.

The reflexivity developed around this innovation however shows some potential to face these challenges. The collective analysis of the dynamics triggered by the innovation supports more aware and adapted strategies by the actors involved. The narrative developed around these varieties/populations focuses on their significance in terms of re-empowerment in the management of local biological and cultural resources, as local community practices under a logic of common goods management (De Boef et al., 2013). This constitutes a powerful reframing which, combined with pressures from the 'landscape' (i.e. commodity markets volatility, need for resilient food systems, demand for healthier food, etc.), might further affect the public debate and the institutional-political environment.

3.2. The empowerment of local actors in the food economy: the case of public procurement in the Drôme valley (France)

Procurement policies have the potential to reconfigure power relations within and beyond the food chain and to provide tools for a sustainability transition (Sonnino, 2009). In this section, we analyse the case of a food hub which fully realised this potential.

3.2.1. Reconfiguration of power relations

Agricourt is a food hub located in the Drôme valley, a rural area of 2200 km² and 54000 inhabitants located in South-East France, which has enabled (re)connecting a large diversity of local actors. It was created in 2011 and arises from the initiative of some parents who decided to promote and facilitate the purchase of fresh seasonal foods by school canteens, by overcoming the related logistical barriers. Meeting farmers during the feasibility study allowed these parents to develop a more complex understanding of agrifood sustainability issues, and they consequently chose to structure the food hub as a community association with a board equally composed of consumers and producers. Agricourt started working with a few schools and some citizens who formed purchase groups to support the initiative in its early stage. As it developed, more small-scale farmers and processors joined in. The clientele also evolved, including more purchase groups, schools, nurseries, but also private restaurants and staff restaurants of large companies. The governance of the platform was then broadened to all stakeholders involved: those who formally join the association have one vote in the General Assembly and the plan in the near future is to adopt a cooperative status to further extend and institutionalize equal relationships among the various actors. This evolution should also involve local authorities.

The principles guiding Agricourt's activity were co-constructed by the members and formalised in a charter where transparency and shared governance were established as key values, while new goals were defined. The initial objective of providing children with fresh, healthy meals evolved towards a more encompassing project, which includes fostering environment-friendly practices (targeting 70% of organic products and *de facto* handling 80%), supporting small-scale farming (not only existing farms but also entry of new farmers into activity), and connecting local producers, citizens and catering professionals. The integration of new actors, such as processors and private restaurants, and the interactions with the local authorities that subsidised the food hub expanded the objectives of the project, resulting in a territorial approach: the objective is not only to structure short supply chains for collective catering, it is more broadly to relocate the food economy and to contribute to a more autonomous rural development. Based on the collectively defined principles and objectives, various practices and rules are implemented. For example, prices are defined yearly in coordination with local, small-scale farmers on the basis of their production costs; lower trade margins are applied to products from local and small-scale farming to encourage customers and to better reward their producers; all orders - even small and remote, non-profitable orders - are honoured. Regarding decision-making, the commercial policy is defined by the board, thus resulting from an agreement between consumers and producers. The other stakeholders contribute to the refinement of these rules and practices during General Assemblies. For example, some contradictions emerged in 2013, between the objectives of respecting the guiding principles and being reliable (filling orders even in case of supply disruption). The General Assembly found a trade-off: to foster local sourcing, the market price list edited weekly by Agricourt only displays local products; however, for collective catering, Agricourt supplies all possible products via a large cooperative organisation which has similar ethics and sells only organic products.

Connecting the various chain actors has implied the acquisition and circulation of market knowledge. Agricourt learnt how to enter the collective catering market, how to structure supply, and how to bid for public tenders. This experiential knowledge has been shared with and has benefited to a growing number of local farmers and processors. With the participation of managers of large company restaurants, further skills and knowledge have been developed. All this has resulted in an undeniable market power: in 2015, 60% of meals served in school canteens in the Drôme valley were prepared with products supplied by Agricourt. The actors participating in and working with Agricourt gradually improved their initially marginal position in the agrifood system, as they collectively acquired and developed several types of power. In turn, they increased Agricourt's legitimacy with respect to agrifood and rural development

issues. Hence, the initial target of “citizen empowerment over food economy”¹³ gave way to a more collective empowerment process.

3.2.2. From reconfigured power relations to redesigning agrifood systems

Agricourt has provided an enabling environment for the creation of an alternative food network, and triggered changes in multiple dimensions (organisational, cognitive, institutional, material, technical and economic):

- the establishment of a shared governance connecting producers, consumers, processors, restaurants and collective catering, and probably in the near future local authorities.
- the re-definition of the project to cover the diverse needs of local actors and consequently encompassing a larger part of the local economy;
- a shared re-definition of quality food, in which taste, terroir and seasonality are taken into account alongside criteria relating to farm characteristics (small-scale) and territorial and social embeddedness;
- the creation of a food hub making quality products available for all operators in the valley and the development of market knowledge and professional skills to manage it;
- new diets and food practices for most children, based on fresh, seasonal and mainly organic products, with more vegetables and legumes,
- the setting up of organisational and marketing tools to translate some ethical values into operational practices and to foster their uptake by other actors (charter, producers’ group, market price list);
- the raising of awareness of various actors (schools, companies, families...) on local, sustainable foods and the subsequent fostering of demand for these.

Agricourt participates in another local initiative called Compagnons de la Terre, aimed at encouraging the setting up of small-scale, organic farmers. Compagnons de la Terre created a farm incubator for new entrants in agriculture to test their project before setting up, and developed an alternative system of farmland management - land access being a key hurdle for these farmers¹⁴. Agricourt supports the initiative by providing these farmers a market (under advantageous conditions), and by participating in the board. Hence, Agricourt has not only supported the development of new infrastructures, knowledge and skills for building fair, local food chains but is also contributing to a further redefinition of technical, economic and institutional aspects of the local agrifood system, including those related to farmland management.

As rules and practices were defined, the narrative underlying Agricourt’s activity acquired a transformative power complementary to the innovative power of the initial, mainly technical proposal. Indeed, its embedding into other components of the local agrifood system laid the foundation for a new socio-technical pathway and for the co-construction of a more systemic vision, both within Agricourt and in interaction with Compagnons de la Terre. Although it became more radical, this systemic scope provided greater consistency and strengthened Agricourt’s reframing capacity. One indication of this reinforced reframing capacity is the alignment of local policies with Agricourt’s activity. Despite the creation of the food hub, school canteens still faced some barriers: Agricourt’s fares were higher than those of industrial businesses and canteen cooks were not used to handling fresh foodstuffs. Local authorities funded the training of canteen cooks (for handling fresh foodstuffs and reducing portions of meat to propose meals at the same fare as before), awareness rising activities for children, municipal representatives and canteen staff, and the creation of small manufacturing plants adapted to processing products from small-scale farms. Moreover, beyond the implementation of complementary policy measures, local policies were deeply transformed, as described in the next section.

3.2.3. Triggering broader change

¹³ Quote from Agricourt’s president in 2012.

¹⁴ For more information, see Bui et al. (2016).

At the time Agricourt emerged, the four communities of municipalities that gather the hundred-plus villages of the Drôme valley were engaged in a local development program called Biovallée, aimed at making this valley a reference territory for sustainable development. Among others, it targeted reaching 50% organic farming and 80% organic products in school canteens by 2015. Those two objectives were closely articulated: conversions to organic farming were supposed to be stimulated by the creation of an industrial plant to process organic vegetables and a food hub to supply schools in the valley. Local authorities managed to attract some private investors but both projects were aborted: investors for the industrial plant defected, and the food hub, created in 2010 by an important organic produce distributor with strong support from local authorities, closed after two years because it was not profitable enough to the owner. While Biovallée's primary focus was to support industrial projects and give impetus to cluster dynamics, a change occurred from 2013 onward, when Agricourt and the farm incubator became flagship projects of Biovallée. Local authorities started calling for the creation of a local agrifood system to support small-scale agriculture and foster food sovereignty and social justice. They consequently adapted their strategy, reorienting their funds towards projects following these principles. While initially their agricultural policy was hitherto focused on technical and logistic aspects, they began working towards renewed relations between actors, funding cooperative initiatives tailored to manage small volumes of farm products. Hence, the dialectic relation between local authorities and Agricourt led to a mutual redefinition of narratives, strategies and activities¹⁵.

This allowed for a mutual reinforcement of legitimacy. Agricourt received many visitors (elected officials and technicians from other regions, scientists, journalists including from national press and television) and was awarded a prize from a famous private foundation. Local authorities benefited from increased visibility and legitimacy over agricultural and rural development issues, which triggered a critical change in power relations. Until the early 2010s, local authorities considered that actions towards farmers were not their jurisdiction, and local agricultural policies were mostly implemented by the local Chamber of agriculture. In the first years of the Biovallée programme, the Chamber of Agriculture questioned its objectives and brought up no significant contribution. The fact that Biovallée evolved towards a rationale at odds with that of the Chamber signalled an empowerment of local authorities and generated tension. Nevertheless, to keep on benefiting from local subsidies (which were furthermore multiplied by three in the Biovallée programme compared to previous programmes) and remain a key actor of the local agrifood system, the Chamber finally proposed projects in line with this new rationale, for instance aimed at enhancing organic farms' autonomy.

Hence, the progressive enrolment of a diversity of actors – including those with economic and market power such as local authorities and private catering companies –, led to the reconfiguration of the local agrifood system and of the associated power relations. Consumers, small-scale farmers and local authorities came to play a key role in the definition and implementation of agriculture and food policies, whereas actors with strong reinforcing power such as the Chamber of agriculture were forced to participate in initiatives in line with a narrative they initially rejected. Although Agricourt's activity is small in terms of revenue and number of farmers compared to conventional food chains, its impact on the practices, rules and norms of numerous local actors and on local power relations is critical.

Which is the potential impact of these changes at the broader, national level? Contrary to the Italian case, the actors involved in Agricourt do not lobby research or national public authorities, neither do they carry out advocacy activities. However, Biovallée is highly publicised and often cited as an example both in academic and political arenas. Its representatives are invited all over France, including in Paris by the Senate and Ministry of Agriculture¹⁶: the collective empowerment process which took place in the Drôme valley could be at the forefront of a transition towards decentralised, locally embedded, sustainable agrifood systems (Stotten et al., 2017).

¹⁵As shown in Bui (2015) and Lamine et al. (2015), these dynamics also involved other initiatives in line with the same vision of agriculture and rural development, which also provided solutions to reach the Biovallée objectives. As these initiatives tackled various components of the agro-food system, together they offered a comprehensive alternative narrative which strongly impacted the Biovallée programme and subsequently triggered a transition of the local agro-food system.

¹⁶It can be assumed that the « Projets alimentaires territoriaux » launched in 2014 by the French ministry of Agriculture which foster the structuration of local agro-food systems through renewed relations between the various actors was partly inspired by Biovallée.

3.3 Multiplying agrifood niches into regional food regimes: the case of South West Wales

Recent (2008-15) longitudinal studies in South West Wales (Marsden and Morley 2014; Adams and Marsden, 2015) have analysed the emergence of what can be termed ‘regionalised food regimes’ in the pasture-based agricultural economy based upon the production and marketing of red meat (lamb, beef), dairy products (mainly milk and cheeses), and a much smaller but emerging horticultural sector. Over the past decade we have witnessed the multifunctional development of a more spatially embedded agrifood sector in the region, partly as a response to the overall crisis which has afflicted the ‘conventional sector’. Both dairy and beef sectors have been historically affected by a series of intensive livestock diseases (mad cow disease, foot-and-mouth disease, and bovine tuberculosis), whilst also losing their traditional locally-based productive and processing infrastructures because of retail and manufacturing corporate concentration and associated, long-distance supply chain logics. This has tended to increase the ‘food miles’ that need to be travelled to markets for fresh Welsh products, and reduce the local and regional control producers have over the quality standards and pricing of their products. As a result, in the conventional sector, markets have become both increasingly volatile, distanced and corporately controlled. There has been a consequent severe reduction in the number of smaller farms, abattoirs and processing facilities. Farmers tied and locked into this conventional sector have been disempowered and their businesses made more unsustainable.

Nevertheless, these negative conditions have been significantly offset in the 2000s by the emergence of a variety of regionally embedded niches which, in a social and spatial sense, begin to constitute the evolution of what we have termed ‘clustered regional agrifood regimes’ (see Table 1). These emerging practices, grounded in the meat, dairy and horticultural sectors, have begun to transform the overall regional agrifood landscape in South West Wales, and there is at least some evidence that similar emergent trends and clusters are developing in other regions in the UK (Little et al., 2010).

Table 1: Summary of the niches researched in the SW Wales agrifood system

		Processing	Market location	Science/Know-Tech-Bio matrix	Market / Industry orientation	Ability to be assimilated by the regime
Meat	Producer Groups Innovation	Established Regional Processor	UK (principally England)	Similar to Regime	Similar to Regime but with increased producer negotiation	High
	Small scale ‘Alternative’ Producer Innovation	On and off farm	Local region	Small scale logic with producer integrated processing knowledge	Local centric gap in market providing outlet for producer to supply	Low
	Conventional Wholesaler Innovation	Established Regional/Welsh Processors	Wales	Science based feed innovation to derive enhanced product qualities	Locality based (Wales) hospitality focused market	Moderate
Dairy	Ethical producer co-operative Innovation	Established processor but moving towards own regional capacity	Wales	Radically dissimilar to regime with divergent aspirations to overall regime logic	Locality based (Wales) multiple and non-multiple based retailing	Moderate
	Organic Farmhouse cheese maker Innovation	On farm	Global (principally UK)	Differentiated breed to derive higher milk quality	Locality based (Wales) multiple and non-multiple based retailing	Moderate

	Non-Bovine Dairy Producer/Processor Innovation	On farm	UK (principally Wales)	Non-bovine dairy employing on farm based processing	Locality based (Wales) multiple and non-multiple based retailing	Low
Horticulture	Regional Producer-Processor Group	Off farm	Wales	Similar to regime – although consideration of regional biophysical constraints in variety selection	Locality based (Wales) multiple and non-multiple based retailing	High
	Medium sized, multi-product Producer	On and off farm	UK/Wales	Plant specific knowledge but similar production techniques to regime	Multi-level UK, Wales, South Wales and some locality based	Moderate
	Farm Shop	On and off farm	SW Wales	Micro-enterprise sourcing networking	Local based retailing, wholesaling	Low

	Largely similar to the regime
	Partially dissimilar to the regime
	Largely dissimilar to the regime

This empirical analysis thus has several implications concerning more broadly the re-configuration of power relations as part of wider agrifood transformations. In particular, the regional regimes identified in South West Wales demonstrate the role of our three sets of potentialities for conceptualising changing power relations. Namely, the case here demonstrates: (i) new spatially embedded and specific characteristics and mechanisms underlying the reconfiguration of these power relations through not least creating new ‘spaces of experimentation’ for new producer led quality standards to be created; (ii) how in turn this can lead for the growth in the potential for reconfiguration through the reshaping of institutions (like the local state) and (bio-physical) practices around food; and (iii) the ways these reconfigurations may lead to broader changes which both constrain the conventional supply chains and at the same time provide opportunities for ‘scaling out’ such regional initiatives. We will tackle these potentialities in turn.

3.3.1. Reconfiguration of power relations

It is evident that there is no clear-cut division between these initiatives, originally termed ‘innovative niches’, and the ‘dominant regime’; and that to force this binary categorisation tends to obscure many of the complex ‘practices of autonomy’ and reconfigured power relations being developed both across and between these. These include contestations and indeed what we might term ‘concerted quests for power’ in the areas of quality food production, adapted rules and quality standards, new (and more autonomous) market developments, more producer control over the specific technical and ecological aspects of production, processing and, in some cases, retailing.

Across the initiatives a consistent feature concerns the development of cooperative organisations, which begin to share variable types of input purchasing, coordination of self-defined quality standards and, especially, marketing and local branding strategies, all outside of conventional systems. A question arises: how do these innovations assemble varying degrees of multi-functional power over their markets, their products, and in the management of their unique sets of bio-physical resources, to then enable these processes and practices to become more sustainable both over time and space?

A key and additional characteristic of building transformative potential is an appreciation of the centrality of what we term the knowledge-technology-biophysical approach to production (see Table 1). Sometimes this can be similar to the dominant regime, as in the cases here of meat producer groups and the regional horticultural processor groups. But in most cases there were varying degrees of autonomous control and innovation pursued in the science-innovation and bio-physical matrix, such as 100% pasture-raised dairy or beef, and/or short-supply chain innovations. These, in turn, led to more ‘market-power’, benefitting both the producers and, more in general, the region - a process of regional re-valorisation. Notably, in these cases it was the re-creation of and support for local and regional processing and wholesaling facilities - rather than relying upon non-regional, distanced and concentrated supply chains - which then facilitated

a more sustainable and empowering set of links between producers and retailers. Recent grant funding from the Welsh Government and its advisory agencies have also supported the market development of some of these initiatives. Thus there is an expanding network of actors and knowledge brokers involved in these developments.

3.3.2. From reconfigured power relations to redesigning agrifood systems

The significant empowerment of the new or revised scientific-technical and bio-physical elements, when matched with the regeneration of spatially and socially distributed local infrastructures, demonstrates how the building blocks for more regionally-based food clusters can gain transformative potential at regional levels.

These developments take place in a context of overall crisis in the more internationalised (e.g. UK and European) conventional sectors, which are increasingly dominated by corporate retail chains and a highly concentrated processing sector. Many of the producer groups examined here attempt to create a regional and bio-physical niche in this context. The meat sub-sector in SW Wales is a case in point. The regional regime is typified by a strong industrial element with many of the producers servicing mainly UK and EU markets. It is also setting new additional rules and standards with regard to the embedded quality of the products, and also increasingly entering global market demands for regionally based products (in both lamb and beef). The producer groups do not restrict their routes to market, however. Rather they seek and actively sustain a more diverse range of markets, including regional livestock markets and local abattoirs. Despite the domination of private policy standards regarding quality (i.e. an element of the mainstream system), these producers have found the space to re-adapt the technology of breeding genetics, quality conventions and grassland management so to deliver higher and more regionally-tailored quality standards to a variety of markets (see Table 1). A culture has developed both within the cooperative producer groups and with key institutional actors that the bio-physical capacity of SW Wales lends itself best to the extensive grass-based production methods. It thus becomes an important responsibility of the cooperatives both to maintain trust relationships among their membership and to manage these revised quality standards. It is also important that these groups are able to continuously maintain these distinctive features in a highly competitive market place, which involves large retailers who are already selling a variety of red meat qualities. This is a constant issue for the cooperatives, both in warding off threats of more generic market absorption from large retailers and in maintaining a 'united front' such that individual farmers/members resist the lure of co-option. This is a major set of obstacles for many such cooperatives, and it is important to recognise it is a continuous process of maintaining both external and internal integrity of purpose. This can make a difference in the cooperatives' sustainability, especially considering the limited public support they receive in terms of infrastructures (i.e. local meat processing) and local food procurement schemes.

In the horticultural sector, an increasingly diverse and fragmented set of local and regional chains and networks are forming in contrast to the dominant retail chains. As with meat, many vegetable producers are valorising the special bio-physical features of their land and its agro-climatic potential in different and novel ways. This requires expert and situated knowledge of both adapted plant species and varieties (such as in the regional seed potato producer-processor group), and the operation of the appropriate technologies to grow, store, and sell the produce. This level of embedded local diversity also has to be harnessed so as to meet the more generic standards of the larger retail outlets as well. Hence, part of developing the potential of these regional systems is to harness rather than suppress local systems of diversity. The horticultural sector has a history of demise in South Wales, having been subjected throughout the past 40 years to the 'super-marketisation' of the grocery sector. This decimated the once densely located farms and retail operations. Unlike the red meat sector, where there was (and still is) significant state support through production subsidies and grants, the horticultural sector received none. This gave free reign for multiple retailers' ability to source from concentrated and less-peripheral regions in England (such as East Anglia and the Welsh Borders) as well as from abroad. Indeed the UK now procures half of its temperate greens and fruits from abroad (mainly Europe). This sector therefore struggles to 'get off the ground' due to lack of investment in local and regional infrastructures. Welsh government policy has recently recognised these obstacles, in a context of increasing demand to improve the dietary quality of meals for

dietary and health reasons. This is likely to enhance the capacity and numbers of local producers and suppliers over the medium to long term.

3.3.3. Triggering broader change

The development of these reconfigured ‘regional regimes’ (Adams, 2015) can be seen as leading to changes both in the strategies of the conventional sector and in the growth, in terms of scaling out, of the regional regimes. Here the Welsh Government has been instrumental in adopting and fostering such regionally embedded experiments and practices both in South West Wales and more broadly across Wales. The development and use of EU rural development funding and European Regional Development funding has been applied to the Welsh Food Strategy (starting in 2010) (see Welsh Government, 2010). This policy, entitled ‘Food From Wales: Food For Wales’, has explicitly enacted the development of regional and Welsh quality brands, especially in the lamb and beef sector. As a result both the production and export of these branded products have increased significantly. The broader changes demonstrate for instance a growth in Welsh quality food exports of 113% between 1999 and 2013, with 15 Welsh products now having EU Protected area of origin (PGI) status. This is also affecting the dominant retail supply chains who are stocking larger amounts of these products both in Wales and across the UK.

4. Overall analysis

The three initiatives analysed, despite significant differences of their origins and spatial features, share a certain degree of reconfiguration of power relations which significantly accompanies the innovations carried out and the transformation triggered at a system scale. Their analysis sheds light on the factors and mechanisms that intervene in the change of power relations and on the related effects in terms of transformative potential. In this section we analyse these aspects through a transversal reading of the three case studies. In doing that, we analyse what emerged from the three sets of potentialities used for the studies through the lens of the integrated theoretical framework we have adopted. Each insight is introduced in general terms and then contextualised in the specific cases.

4.1. Reconfiguration of power relations

The development of relationship networks and cooperation around the innovation being developed proves to be a first, fundamental step. In particular, the existence of relational spaces where actors can find conditions for new and equal interactions is crucial. They support knowledge exchanges and new learning processes and, through these, individual empowerment and legitimation, as well as the development of common understanding, reflexivity and agency, conducive to new forms of collective power. This evidence contributes to enriching the results from other studies on farmers’ autonomy, positioning both individual and collective forms of re-empowerment into forms of ‘actual autonomy’, capable of opposing the effects of neoliberalisation in agriculture (van der Ploeg, 2008; Stock et al., 2014). Both forms of empowerment are important in the interaction with new actors, including also pieces of the mainstream system. Again, creation of new common knowledge through exchange and shared learning plays a key role in these processes. While shared learning is an outcome of interaction, it also makes interaction more effective, supporting the different actors in mutual understanding and in aligning around common goals. The local/regional scale proves to be a context potentially favourable to these processes; however the alignment around shared visions and goals appears able to go beyond proximity, shaping other forms of ‘closeness’, such as those which characterise broader networks.

The three pathways analysed show the relevance of these aspects. In the Italian case, the shared perception of a problem with mainstream genetic resource management and the approaches that some like-minded scientists, advisors and facilitators adopted led to more equal interactions between these and farmers and other involved actors. Within this relational environment, a significant reframing of the genetic resource management issue and of the associated role of actors directly involved has occurred, leading to empowerment processes and development of collective agency. Building on this, the collaborative

connections established with regional and national institutions have provided additional opportunities, opening new spaces of visibility and legitimacy. In turn, the integration of local initiatives in a broader context of advocacy and political action has further supported this empowerment process. In the French case of Agricourt, the equal interaction initially developed between consumers and producers, and then with processors, catering professionals and local authorities has allowed reciprocal acquaintance, the construction of common visions and goals and the recognition of the role that each part may play to achieving them. Along with a growing technical and market knowledge, this paved the way to establishing new power relations, involving actors previously excluded from the governance of the local agrifood system alongside actors traditionally exerting reinforcing power. The development of cooperative organisations and place-based practices and relationships constitutes a significant feature of the Welsh case. They become the space where interaction and coordination trigger changes.

Within this relational context, a 'soft' but significant process of reconfiguration of power may thus occur, where new actors gain autonomy and are legitimated (farmers and consumers), others repositioned (actors initially exerting reinforcing power who start cooperating with innovators), and new collectively managed powers develop.

In the Italian and French cases, the multi-actor networks involved around the innovation (including scientists), the enrolment of public officers as well as the robustness of the new coalitions formed around it, exemplify this process. In the Welsh case, new power relations develop where local conditions (e.g. availability of facilities) allow experimenting new autonomy in managing technical and ecological aspects of production processes or marketing.

4.2. From reconfigured power relations to innovation

Within these reconfigurations, the resources underlying the various forms of power are mobilized and integrated to support the common action. As the cases have shown, these processes favour the emergence of different forms of knowledge, which allow managing technological, institutional, legal and normative aspects. According to the needs and goals agreed among the networked actors, the re-configured power relations so result in co-construction and progressive legitimation of new practices and new institutions acting, referring to Elzen and colleagues (2012), on technical and on cognitive, normative and economic components. This creates conditions for the consolidation of innovative socio-technical trajectories.

In the Italian case, against a background of increasing social consensus and mobilisation around the innovation, the networks of relationships and alliances established have promoted significant changes in terms of re-orientation of research and re-definition of technology, product quality, organisational models and economic arrangements in the supply chains, as well as normative frames. Similarly in the French case, the progressive enrolment of public and economic actors around Agricourt allowed the growth and consolidation of the innovation in its technical components and institutional arrangements. These include the spreading of sustainable practices among catering professionals and consumers, as well as the formalisation of new rules supportive of sustainable food chains. In the Welsh case, in a context of increasing market demand for high quality, regional products, re-configuring producer control over bio-physical components (e.g. breeds and grasslands) and technical quality standards has allowed transforming systems of production and marketing.

Significant mechanisms underlie the change potential of power reconfiguration.

Besides developing new shared knowledge, the interactive and iterative process of learning and developing new practices makes actors more aware of the multiple dimensions of the problem they address and favour the adoption of a broader, more systemic perspective on the change processes to be promoted as well as of a more strategic capability. The reflexivity stemming from greater awareness of the issues at stake and of their interdependencies translates in a more comprehensive view of what is (or may be) actualized (from the technical aspects to the institutional and legal ones), as well as of the different scales of the transformative action (e.g. local farming/food systems, regional development, broader networks or movements, international contexts). This results in further empowerment and reinforces the transformative potential of initiatives.

In the Italian case, after sharing new knowledge, practices and narratives related to the management of genetic resources, the various locally-based initiatives have engaged in common action to understand and

face institutional and legal challenges. When doing that, they have increasingly perceived themselves as a part of a broader (in Europe and beyond) “re-appropriation” movement, carrying a political connotation. In the French case, Agricourt’s collaboration with other local initiatives, aligned around the same principles and visions but acting on different components of the agrifood system, leads to design a more comprehensive political proposition for public authorities to uptake. In the Welsh case, the capacity of meat producer groups to maintain both external and internal integrity and unity of purpose, defending their distinctive features in a highly competitive market place, is a critical factor in their sustainability which founds an enabling environment in the new production culture developed and shared among both producers and key institutional actors.

The changes promoted through the new power relations have effect on the process of power reconfiguration itself, which is thereby potentially continuous, depending on the context. With the spread of innovation, new actors may enter the change process, triggering new interactions and co-learning, through which the new actors align to the innovative vision, practices and institutions. A redefinition of the network of relevant actors thus occurs (Bui et al., 2016), stimulating the reorganisation of power relations. In this process, significant dynamics among forms of power are involved (such as knowledge, reframing, institutional and legal power) which, moving across the specific social settings, give rise to innovative solutions as well as to further potential for change. This creates conditions for the full expression of the transformative potential of the initial innovation: while resulting in a further spreading, strengthening and institutionalisation of the new practices, the new power reconfiguration can trigger significant system changes (as we see in the following section). These outcomes occur in all the cases we have analysed.

4.3. The (effectiveness and durability of) power reconfiguration and transformative action

In the short- to medium term period, the power dynamics and reconfigurations appear to be able to promote partial but significant transformations in the agrifood system.

In the Italian case, the innovation promoted has already had effects on the orientation of genetic improvement and industrial processing technology, as well as on how product quality is conceived, by practitioners and public opinion; policy makers’ opening on these issues is also significant, for its effects on the institutional-juridical-political framework and in terms of governance (the legitimacy acquired by grassroots initiative representatives in the policy spaces, at national and European level, is meaningful). In France, the Agricourt project has promoted a deep change in the local authorities’ approach to agricultural and rural development and led to the implementation of a new governance of part of the local agrifood system, providing an example of an innovative organisational model. In Wales, the re-organisation of the meat, dairy and horticultural sectors in regionally embedded, higher quality production systems, increasingly supported by Welsh Government, has begun to constitute an interesting transformative model for regional agrifood regimes.

On the other hand, some evidences also confirm that the outcome of the actual interaction among innovative, transformative and reinforcing powers should not be taken for granted and underscored in their effects. Indeed, in the ‘conventionalisation’ perspective, the last ones may counteract the first two: over the process of ‘translation’, along with Smith (2007), the potential for change of innovations may be lowered, or even instrumentally used to reinforce established positions (of big players of agrifood industry, of research fields/approaches). According to a more nuanced view, in this evidently never-ending process of power reconfiguration, the capacity of the innovative actors to maintain a high level of reflexivity on how to handle the innovation, over its diffusion and development, helps in maintaining some transformative potential.

In the Italian case, the dynamics involving economic, institutional, political-juridical and discursive powers arisen around the innovation in genetic resource management is emblematic. The choice of the innovation promoters to focus on heterogeneous materials and to protect them from misappropriation is illustrative of the need for and capability of strategical adaptation. Similarly, their framing actions for agrobiodiversity in terms of seed/food sovereignty and common goods management aims at counteracting the trivializing and disempowering effects of agroindustry marketing strategies, indeed diminishing values and potentials embodied in the products.

Path-dependency mechanisms and implementation complexity seem to pose further challenges.

In the Italian case, the potential of the public support to innovative pathways is sometimes weakened by the persistence of conventional procedures and approaches. In the French case, the dilemma between fulfilling all requests and respecting Agricourt's guiding principles also illustrates the challenge of striving for a transformation while facing the real-world trade-offs. In the Welsh case, the competitive dynamics continuously challenge the new regionally-based meat sector, demanding a significant effort to maintain control on its diverse market positioning.

5. Conclusions: redefining reconfiguration of power in agrifood systems

The analysis of our three empirical domains demonstrates that the conceptualisations of change in power relations and of the transformation they promote are quite different when compared to any generic theory of transition which allows for a radical transformation and the replacement of the "dominant" system. Rather, they refer to complex and diversified power reconfigurations associated with regionally grounded and fragmented processes of change, driven by the emergence of multiple pathways of transformation. This confirms the need for a more variegated and nuanced configuration of power relations, taking into consideration, in a multi-scale perspective, the variety of interactions that, through the play of the different forms of power, may develop among what are traditionally considered as "powerless" and "powerful" players of the agrifood sectors. It also stresses the need to look at these power relations in dynamic terms, taking into account the changing distribution of different forms of power due to the interplay among the actors and the different scales. The bidirectional dynamics that may develop among micro-, meso- and macro-level around policy definition/implementation/experimentation are illustrative in this regard. They build on the mobilisation of different powers (knowledge, legitimacy, reframing, institutional and legal), involving different actors and triggering inter-scale processes of innovation.

Significant changes at macro-system level are undoubtedly situated in the long-term period and their results are unpredictable, due to the apparent supremacy of reinforcing power, especially in the forms of economic powers, controlling any change in the established structures of the agrifood system (Constance et al., 2014). In the meantime, however, this and other analyses show that it is important to study the ways in which more decentralised and distributed processes can strengthen and significantly affect new assemblages and practices around food (Le Heron et al., 2016; Forney et al., 2018; Moragues Faus and Marsden, 2017). In line with the recognition of the value of "politics of the possible for sustainable community and regional food systems" (Gibson-Graham, 2006, p. 1086), the varied and localised pathways of social mobilisation and, on the other side, democratisation of decision-making around food issues can be considered at the moment as the most promising strategy. The successful initiatives in local food policies or locally managed research/development projects are examples in that sense. Moreover, far from localism, the capacity of these pathways to be connected in wider arenas of innovation shows their broader transformative potential.

Analysing these initiatives in depth provides useful insights both for the policy and research agenda. The importance emerges of uncovering the inner mechanisms underlying the change in power relations among different actors involved, such as effects of path dependences or of sharing learning processes able to change cognitive and normative codes or of maintaining a high level of reflexivity. The evidence also confirms the significance of proper scales, spaces, tools and rules of governance for creating enabling conditions to rebalance power relations and, through openness and reflexivity, to allow the expression of innovative and transformative powers wherever they develop (Marsden, 2013). In a context of increasing pressures from the 'landscape', investing on the diversity of pathways towards sustainability, catching all the potentialities and assuring their emergence appear as the most appropriate option.

Acknowledgements

The Italian case was studied through European (SOLIBAM, DIVERSIFOOD) and regional projects and, more in general, through a close interaction with RSR.

The French case was studied in the framework of Bui's PhD thesis (2015) funded by INRA and the Rhône-Alpes region, which also benefited from financial support from ANR Dynrurabio and Core-Organic Healthy Growth projects.

The Welsh cases bear upon ESRC research conducted by Marsden and Adams, and especially in the latter's PhD thesis which was sponsored by both ESRC and the Agricultural and Development Advisory Service (ADAS).

References

- Adams, M. and Marsden, T.K., 2015. Agrifood transitions: a regional systems approach. Paper presented at the ESRC Food Futures workshop. Cardiff University, Nov 2015.
- Arora, S. and Glover, D. (2017) Power in Practice: Insights from Technography and Actor-Network Theory for Agricultural Sustainability, STEPS Working Paper 100, Brighton: STEPS Centre.
- Avelino, F. and Wittmayer, J.M., 2016. Shifting power relations in sustainability transitions: A multi-actor perspective. *Journal of Environmental Policy and Planning* 18(5), pp.628-649.
- Avelino, F., 2011. Power in transition: Empowering discourses on sustainability transitions (PhD-thesis). Erasmus University, Rotterdam.
- Avelino, F., Grin, J., Pel, B. and Jhagroe, S., 2016. The Politics of Sustainable Transitions. *Journal of Environmental Policy and Planning* 18 (5), pp.557-567.
- Bocci, R., 2014. Seeds between freedom and rights. *Scienze Territorio*, 2, pp.115-121.
- Bocci, R., Pearce, P. and Chable, V., 2014. Policy recommendations for legal aspects of seed certification and protection of Plant Breeders' Rights and Farmers' Rights -SOLIBAM
- Bruckmeier, K. and Tovey, H., 2008. Knowledge in Sustainable Rural Development: From Forms of Knowledge to Knowledge Processes. *Sociologia Ruralis*, 48(3), pp.313-329.
- Bui, S., 2015. For a territorial approach of ecological transitions. Analysis of an on-going transition towards agroecology in Biovallée (1970-2015) (PhD-thesis). AgroParisTech.
- Bui, S., Cardona, A., Lamine, C., Cerf, M., 2016. Sustainability transitions: Insights on processes of niche-regime interaction and regime reconfiguration in agrifood systems. *Journal of Rural Studies*, 48, pp.92-103.
- Castan Broto, V., 2016. Innovation territories and energy transitions: Energy, water and modernity in Spain, 1939–1975. *Journal of Environmental Policy and Planning* 18 (5), pp.712-729.
- Ceccarelli, S., Guimarães, E.P., Weltzien, E., 2009. Plant breeding and farmer participation, Food and Agriculture Organization of the United Nations (FAO), Rome.
- Clapp, J. and Fuchs, D.A., 2009. Corporate Power in Global Agrifood Governance, MIT Press, Cambridge, Mass.
- Constance, D.H., Choi J.Y. and Lyke-Ho-Gland H., 2008. Conventionalization, bifurcation, and quality of life: certified and non-certified organic farmers in Texas. *Southern Rural Sociology*, 23(1), pp.208-234.
- Constance, D.H., Friedland, W.H., Renard, M-C., Rivera-Ferre, M.G., 2014. The Discourse on Alternative Agrifood Movements. In: Constance, D.H., Renard, M.-C., Rivera-Ferre, M.G., Editors, 2014. *Alternative Agrifood Movements: Patterns of Convergence and Divergence*, Emerald, Binkley.
- De Boef, W.S., Subedi, A., Peroni, N., Thijssen, M. and O'Keeffe, E., Editors, 2013. *Community Biodiversity Management: Promoting Resilience and the Conservation of Plant Genetic Resources*, Earthscan from Routledge, London.
- Elzen, B., Geels, F.W., Leeuwis, C., van Mierlo, B., 2011. Normative contestation in transitions 'in the making': Animal welfare concerns and system innovation in pig husbandry. *Research Policy* 40, pp.263-275.
- Elzen, B., van Mierlo, B., Leeuwis, C., 2012. Anchoring of innovations: Assessing Dutch efforts to harvest energy from glasshouses. *Environmental Innovation and Societal Transitions* 5, pp.1-18.
- EU SCAR, 2014. *Agricultural Knowledge and Innovation Systems Towards 2020. An orientation paper on linking innovation and research.* Luxembourg Publications Office of the European Union.
- Forney, J. and Häberli, I., 2016. Introducing 'seeds of change' into the food system? Localisation strategies in the Swiss dairy industry. *Sociologia Ruralis*, 56(2), pp.135-156.

- Forney, J., Rosen, C. and Campbell, H. (eds) 2018. *Agri-Environmental Governance as Assemblage: multiplicity, power and transformation*. Earthscan/ Routledge.
- Francis, C., Lieblein, G., Gliessman, S., et al. 2003. Agroecology: the ecology of food systems. *Journal of sustainable agriculture* 22(3), pp.99-118.
- Fuchs, D. and Glaab, K., 2011. Material power and normative conflict in global and local agrifood governance: The lessons of 'Golden Rice' in India. *Food Policy* 36, pp.729–735.
- Geels, F.W. and Schot, J., 2007. Typology of sociotechnical transition pathways. *Research Policy* 36(3), pp.399-417.
- Geels, F.W., 2005. *Technological transitions and system innovations: A co-evolutionary and socio-technical analysis*, Edward Elgar publishing, Cheltenham.
- Geels, F.W., 2010. Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Research Policy* 39(4), pp.495–510.
- Geels, F.W., 2011. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions* 1(1), pp.24-40.
- Geels, F.W., 2014. Regime resistance against low-carbon transitions: Introducing politics and power into the multi-level perspective. *Theory, Culture & Society* 31(5), pp.21-40.
- Gibson-Graham, J.K., 1996. *The End of Capitalism (As We Knew It)*. University of Minnesota Press, Minneapolis.
- Gibson-Graham, J.K., 2006. *A Postcapitalist Politics*. University of Minnesota Press. Minneapolis, MN.
- Gliessman, S. R., 1998. *Agroecology: ecological processes in sustainable agriculture*, CRC Press, Boca Raton.
- Hoffman, J., 2013. Theorizing power in transition studies: The role of creativity in novel practices in structural change. *Policy Sciences* 46(3), pp.257-275.
- Ingram, J., Curry, N., Kirwan, J., Maye, D. and Kubinakova, K., 2014. Interactions between niche and regime: an analysis of learning and innovation networks for sustainable agriculture across Europe. *Journal of Agricultural Education and Extension* 21(1), pp.55-71.
- Jaffe, J.A., Gertler, M., 2006. Victual vicissitudes: Consumer deskilling and the (gendered) transformation of food systems. *Agric. Hum. Val.* 23, 143–162.
- Kilelu, C.W., Klerkx, L., Leeuwis, C. and Hall, A. 2011. Beyond Knowledge Brokering: An Exploratory Study on Innovation Intermediaries in an Evolving Small holder Agricultural System in Kenya, *Knowledge Management for Development Journal* 7(1), pp.84-108.
- Kloppenburg, J., 2010. Impeding Dispossession, Enabling Repossession: Biological Open Source and the Recovery of Seed Sovereignty *Journal of Agrarian Change*, 10(3), pp.367-388.
- Knickel, K., Brunori, G., Rand, S. and Proost, J., 2009. Towards a better conceptual framework for innovation processes in agriculture and rural development: from linear models to systemic approaches. *J. Agric. Educ. Ext.*, 15, pp.131-146.
- Lamine, C., Bui, S., Ollivier, G., 2015. Pour une approche systémique et pragmatique de la transition écologique des systèmes agri-alimentaires. *Cahiers de recherche sociologique* 58, 95–117.
- Le Heron, R., 2007. Globalisation, governance and post-structural political economy: perspectives from Australasia. *Asia Pacific Viewpoint* 48(1), pp.26-40.
- Le Heron, R., Campbell, H., Lewis, N., Carolan, M., 2016. *Biological Economies: Experimentation and the Politics of Agri-food Frontiers*. Routledge, New York.
- Little, R., Maye, D. and Ilbery, B., 2010. Collective purchase: Moving local and organic foods beyond the niche market. *Environ. Plan. A*, 42, pp.1797-1813.
- Loeber, A., 2003. Inbreken in het gangbare: Transitie management in de praktijk-De NIDO benadering (Breaking in into the usual: Transition management in practice-The NIDO approach). NIDO, Leeuwarden.
- Marsden, T., 2013. From post-productionism to reflexive governance: Contested transitions in securing more sustainable food futures. *Journal of Rural Studies* 29, pp.123-134.
- Marsden, T.K and Morley, A (2014) (eds) *Sustainable Food Systems: building a new paradigm*. Earthscan/Routledge.
- McMichael, P., 2012. Food Regime Crisis and Revaluing the Agrarian Question, in Almås, R. and Campbell, H. (ed.) *Rethinking Agricultural Policy Regimes: Food Security, Climate Change and the*

- Future Resilience of Global Agriculture (Research in Rural Sociology and Development, Volume 18 Emerald Group Publishing Limited, pp.99-122.
- Moragues-Faus, A. and Marsden, T.K. 2017. The political ecology of food; creating spaces of possibility in a new research agenda. *Journal of Rural Studies*.
- Pimbert, M., 2006. *Transforming Knowledge and Ways of Knowing for Food Sovereignty*, International Institute for Environment and Development (IIED), London.
- Renting, H., Schermer, M., Rossi, A., 2012. Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship. *International Journal of Sociology of Agriculture and Food* 19, pp.289-307.
- Rosin, C. and Campbell, H., 2009. Beyond bifurcation: Examining the conventions of organic agriculture in New Zealand. *Journal of Rural Studies* 25, pp.35-47.
- Rossi A., Bocci R., Bussi B., De Santis G., Franciolini R., Pozzi C., 2018. New goals, roles and rules around agrobiodiversity management. *Proceedings of 55° Conference of SIDEA*, Perugia, Italy.
- Rotmans, J. and Loorbach, D., 2010. Towards a better understanding of transitions and their governance: A systemic and reflexive approach, Part II. In: Grin, J., Rotmans, J. and Schot J., Editors, 2010. *Transitions to sustainable development; new directions in the study of long term transformative change*, Routledge, New York.
- Seyfang, G. and Haxeltine, A., 2012. Growing grassroots innovations: Exploring the role of community-based social movements in sustainable energy transitions. *Environment and Planning C30(3)*, pp. 381-400.
- Seyfang, G. and Smith, A., 2007. Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental politics* 16, pp.584-603.
- Smith, A. and Raven, R., 2012. What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy* 41, pp.1025-1036.
- Smith, A., 2007. Translating sustainabilities between green niches and socio-technical. *Technology Analysis & Strategic Management* 19(4), pp.427-450.
- Sonnino, R., 2009. Quality food, public procurement, and sustainable development: the school meal revolution in Rome. *Environ. Plan A* 41, 425–440.
- Stevenson, G.W., 1998. Agrifood systems for competent, ordinary people. *Agric. Hum. Val.* 15, 199–207.
- Stock, P.V., Forney, J., Emery S.B. and Wittman, H. 2014. Neoliberal natures on the farm: Farmer autonomy and cooperation in comparative perspective. *Journal of Rural Studies* 36, p.411-22.
- Stotten, R., Bui, S., Pugliese, P., Schermer, M., Lamine, C., 2017. Organic Values-Based Supply Chains as a Tool for Territorial Development: A Comparative Analysis of Three European Organic Regions. *International Journal of Sociology of Agriculture & Food* 24.
- Van der Ploeg, J.D., 2008. *The New Peasantries. Struggles for autonomy and sustainability in an era of Empire and globalisation*. Earthscan, London.
- Welsh Government, 2010. *Food From Wales: Food For Wales. A Food Strategy for Wales: 2010-2020*.