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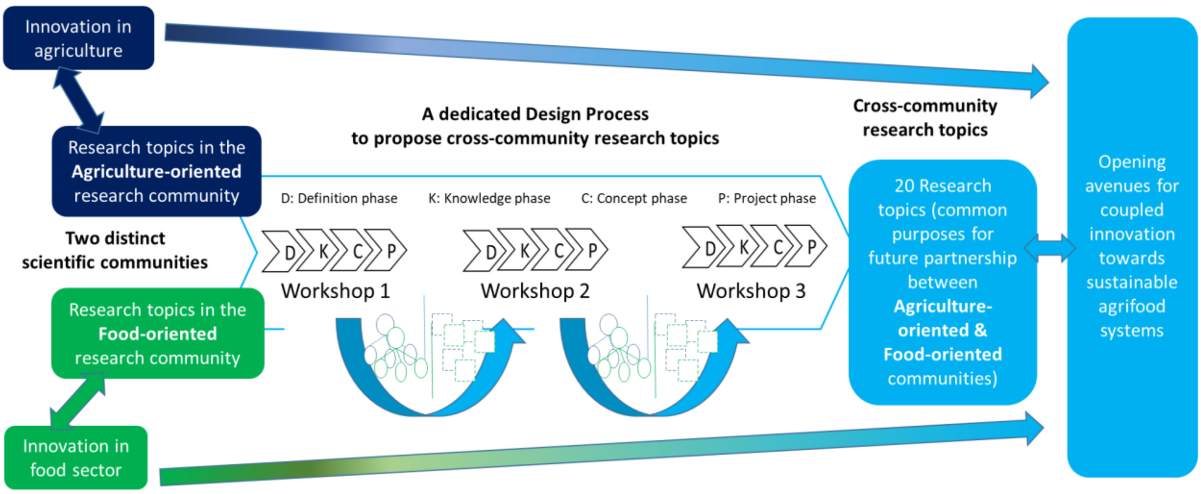
Highlights

- Designing coupled innovations is required to support the agrifood transition
- Addressing coupled innovation requires the exploration of priority research topics
- An original method was developed to enhance cross-community research topic emergence
- Our original method relies on the combination of two innovative design processes
- Twenty research topics crossing agriculture and food communities were identified

Graphical abstract



Abstract

CONTEXT. Researchers studying agriculture and researchers studying food share common interests in working on the sustainability of agrifood systems. Yet, they form two distinct scientific communities, which often struggle to work together due to both scientific specialization and existing disconnections between agriculture and food production standards. However, there is today a crucial need for research to generate new knowledge and innovations to meet the numerous challenges towards sustainable agrifood systems.

OBJECTIVE. This paper therefore presents how two scientific communities (those of agriculture and food) collectively explored cross-community research topics, which could foster coupled innovation in agrifood systems.

METHODS. Two innovative design methods - KCP and matching-building – were combined to propose a dedicated design process fostering this collective exploration of cross-community research topics.

RESULTS AND CONCLUSIONS. Twenty cross-community priority research topics were thus proposed to address various sustainability challenges. These topics were designed to become common purposes for future research collaborations aiming to produce relevant knowledge to open new avenues for coupled innovation towards more sustainable agrifood systems. The originality of the 20 topics was discussed, in comparison with 25 international papers highlighting research priorities regarding food systems.

SIGNIFICANCE. The originality of the paper is thus twofold: the article details the original dedicated design method used to build cross-community research topics, and presents the 20 research topics designed using this method.

Key words: *common purpose, C-K theory, agronomy, food sciences, social sciences, design workshops.*

1. Introduction

The agrifood sector is concerned by numerous issues to address its transition toward more sustainability: e.g. facing and mitigating climate change, protecting and enhancing biodiversity, reducing natural resource depletion, improving soil, air and water quality, preventing nutritional deficiencies and obesity. Such a transition requires to promote the disruptive and systemic innovation capability of this sector (Leach et al., 2012; Tilman and Clark, 2015; Prost et al., 2017). Among relevant stakeholders, scientific communities have a role to play in this process, provided that research gets rid of the current scientific silos which hinder a fruitful exploration of such complex systems (Béné et al., 2019; El Bilali et al., 2019).

Indeed, while both the agriculture and the food scientific communities aim at sustainability targets within the agrifood sector, there is a strong disconnection between their research topics. On the one hand, the agriculture scientific community studies and models the processes controlling the relationships between plants, soil, climate and farming methods, and their embeddedness in social networks and markets, in order to design cropping and farming systems, decision-support tools, and assessment methods that are useful to improve agriculture (Duru et al., 2015; Edreira et al., 2018). On the other hand, the food scientific community studies and models physical, chemical, biochemical and microbiological phenomenon in foods, together with changes during processing of raw resources into food (Potter and Hotchkiss, 2012). This community also studies food preferences and behaviors of consumers, and deals with systemic approaches such as the organization of the actors in the food systems or the impact of food systems on the environment. These scientific communities separately aim at increasing the sustainability of agriculture and food, whereas recent studies emphasize the necessary strong interconnection between these two stages of the value chain to address such issue (TIlman & Clark, 2015; Rivera-Ferre et al., 2013; Francis et al., 2003; Levidow et al. 2014).

In all sectors, improving sustainability requires innovation, whether it be technical, organizational, institutional, or marketing. Agriculture and food scientific communities have long contributed to innovation. For instance, agriculture-oriented research helps providing farmers, engineers and advisors with innovative solutions regarding crop-soil management techniques aiming to increase crop yields, to reduce loss risks, and to lessen the environmental impacts of agriculture (Tilman and Clark, 2015; Loyce et al 2012; Meynard et al, 2012), whereas food-oriented research supports food producers to explore new modes of formulation, preservation, processing or packaging for food (Benatallah et al., 2012; Villemejane et al. 2013; Schifferstein, 2015) (Fig. 1). Even if, nowadays, innovation is still mainly managed separately within each domain, a reconnection between the innovation processes taking place within the agriculture and food sectors is claimed in the view to reach sustainability issues, and to limit the imbalance of power between actors (Meynard et al., 2017; Stuart and Worosz, 2012). For example, whereas agronomic researchers showed that a lesser use of fertilizers allows reducing nitrogen loss in the environment (Makowski et al., 1999), thus reducing agricultural water pollution (Prost et al., 2018), it also results in a decrease of the protein content of wheat flour, therefore damaging the quality and aspect of bread (Veraverbeke and Delcour, 2002), which is not accepted by bakers and consumers. A new challenge is thus to coordinate innovation processes in food engineering (making good bread with low protein flour) and in agronomy (fertilizing while reducing loss towards environment) in a win-win perspective. Such coupled innovation processes are required to improve the whole agrifood system. Coupled innovation is here defined as interconnected innovation processes from agriculture and food sectors to manage the complex interrelations between them, and contribute to a systemic transition towards more sustainable agrifood systems (Meynard et al., 2017). We assume that this also requires new connections between the agriculture and food scientific communities, to produce specific knowledge enhancing the generative capacity of research (Toffolini et al., 2020), as well as its role in supporting farmers, food producers, retailers, consumers, and logistics providers in exploring innovations likely to improve the sustainability of agrifood systems (Fig. 1).

However, if a renewed dialog between different scientific communities could help enhancing coupled innovation processes within the agrifood sector, scholars working on agriculture and food often struggle to work together due to long-term and institutionalized scientific specialization (Fig.1; Kostoff, 2002; Dewulf et al., 2007; Béné et al., 2019). As shown by Gillier et al. (2012) and Brun et al. (2019), encouraging researchers to conduct original cross-community research, bridging scientific fields, requires to design new purposes for collaboration. Designing these common purposes requires a dedicated effort: indeed, each discipline relies on specific vocabulary and concepts (Kostoff, 2002), and scientists involved in specific scientific communities (like the agriculture or the food ones) often tend to be fixed by knowledge related to their own area, expertise or discipline (Vourc'h et al., 2018; Jansson and Smith, 1991). Generating common purposes for collaboration (i.e. common research topics) between scientific communities thus corresponds to an innovative design activity (Hatchuel and Weil, 2009), where both unknown knowledge and unknown concepts have to be explored to avoid fixation on specific scientific research issues (Vourc'h et al., 2018). To help scientists devoted to agriculture and food designing common purposes, it is therefore necessary to organize the dialog between the two scientific communities with relevant design tools and methods.

The objective of this research was twofold: (1) to settle an innovative design method aiming to generate original cross-community research topics, and (2) to propose research topics, crossing both agriculture and food sectors, in the view to address sustainability issues in the agrifood systems. We also highlighted the added value of our method by discussing the novelty and the relevance of the generated research topics with regards to the literature. We assume that our approach should allow not only to consider the respective constraints of agriculture and food production in light of sustainability challenges to produce new knowledge, but also to better challenge them with new ideas.

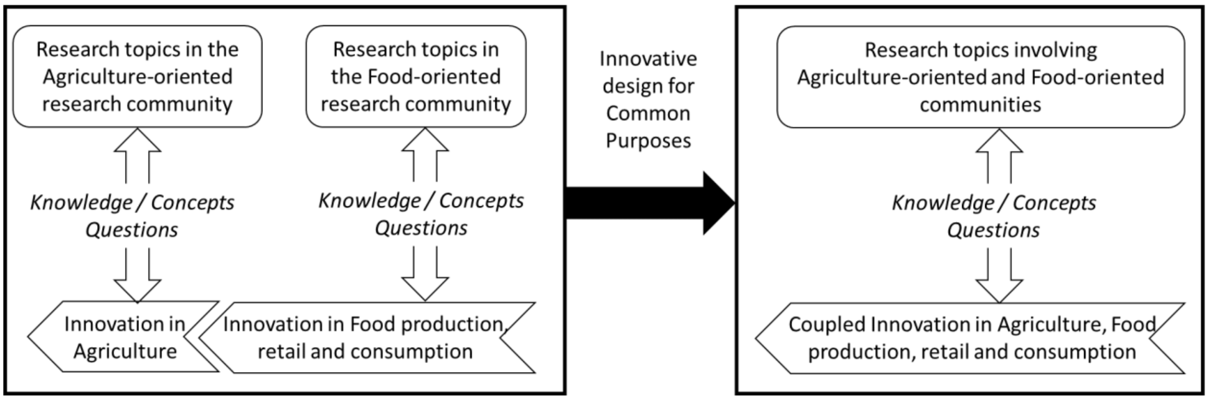


Figure 1. Innovation and research in the agrifood system: current (left) and proposed (right) links between Innovation processes and research activities in both agriculture and food domains: from disconnected innovation and communities toward coupled innovation processes and Common Purposes for researchers focusing on agricultural production and researchers focusing on food production and consumption.

2. A method based on innovative design to collectively build common purposes for collaboration between two scientific communities

2.1. Mobilizing design theory to generate challenging common purposes in research

The notion of common purpose has been largely developed in management studies, which have shown its strategic importance regarding the design of new and long-lasting collaborations between diverse communities (Wildridge et al., 2004; Weck, 2006; Gillier et al., 2012). When the purposes for collaboration are not well-defined, approaches based on innovative design may help stakeholders achieving the design of new common purposes (Gillier et al., 2010, 2012). Among others, the C-K theory (Hatchuel and Weil, 2009) offers a framework to build methods addressing both cognitive and organizational barriers to innovative design. It distinguishes two spaces: the Concept space (or C-space) and the Knowledge space (or K-space). C is the space of ideas: it includes verbal statements without logical status (it is impossible to say if the statement is true or false, or if its object exists or not); K space includes statements with a logical status (the statement is either true or false, its object exists or does not exist). According to C-K theory, innovation emerges from a dialog between the C-space and the K-space, which leads to a co-expansion of concepts and knowledge (Hatchuel and Weil, 2009). The Fig. 2 illustrates these dynamics of co-expansion by starting with the initial concept "a naturally pink chocolate".

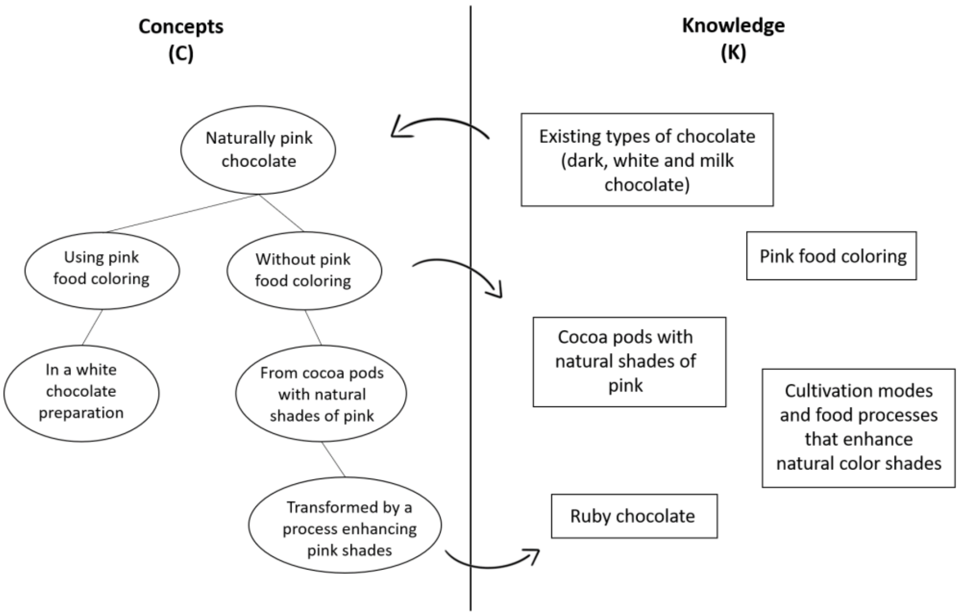


Figure 2. The C-K dynamics in innovative design: a co-expansion of the C- and K-spaces.

To develop such concept, a designer may mobilize knowledge regarding the different existing types of chocolate (dark, white and milk chocolate) before exploring a first conceptual path: for instance, a "pink chocolate" "using pink food coloring" "in a white chocolate preparation". In order to design a "naturally pink chocolate", another strategy may be explored: "without pink food coloring". Such constraint leads to another "concept" (Initially, it is impossible to say if such pink chocolate without food coloring could exist or not) and will involve acquiring new knowledge in K: for instance, knowledge regarding cocoa pods with natural shades of pink. A new transformation process could then be used to enhance this natural shade of pink and create a "natural" pink chocolate. Such concept actually corresponds to the Ruby chocolate (the fourth official type of chocolate, which was introduced in 2017 by the Barry Callebaut company). The associated C-K-map, which addresses agriculture and food processing issues, therefore shows how innovation emerges from a co-expansion of concepts and knowledge. C-K theory has often been used as a framework to propose new innovation methods: for instance, C-K maps (such as the one on Fig. 2) are used to foster the development of disruptive ideas and original concept paths, thus tackling fixation effects (Hatchuel and Weil, 2009). To support the collective design of common purposes by researchers studying agricultural production and food, we especially relied on two C-K-based methods: KCP (Elmquist and Segrestin, 2009) and OPERA (Gillier et al., 2010). The KCP process distinguishes four phases: Definition, Knowledge, Concept and Project phases (Elmquist and Segrestin, 2009; Hooge et al., 2017; Vourc'h et al., 2018), and helps developing an innovative design reasoning in a collective context, without necessarily showing C-K maps to the participants (Fig. 3a).

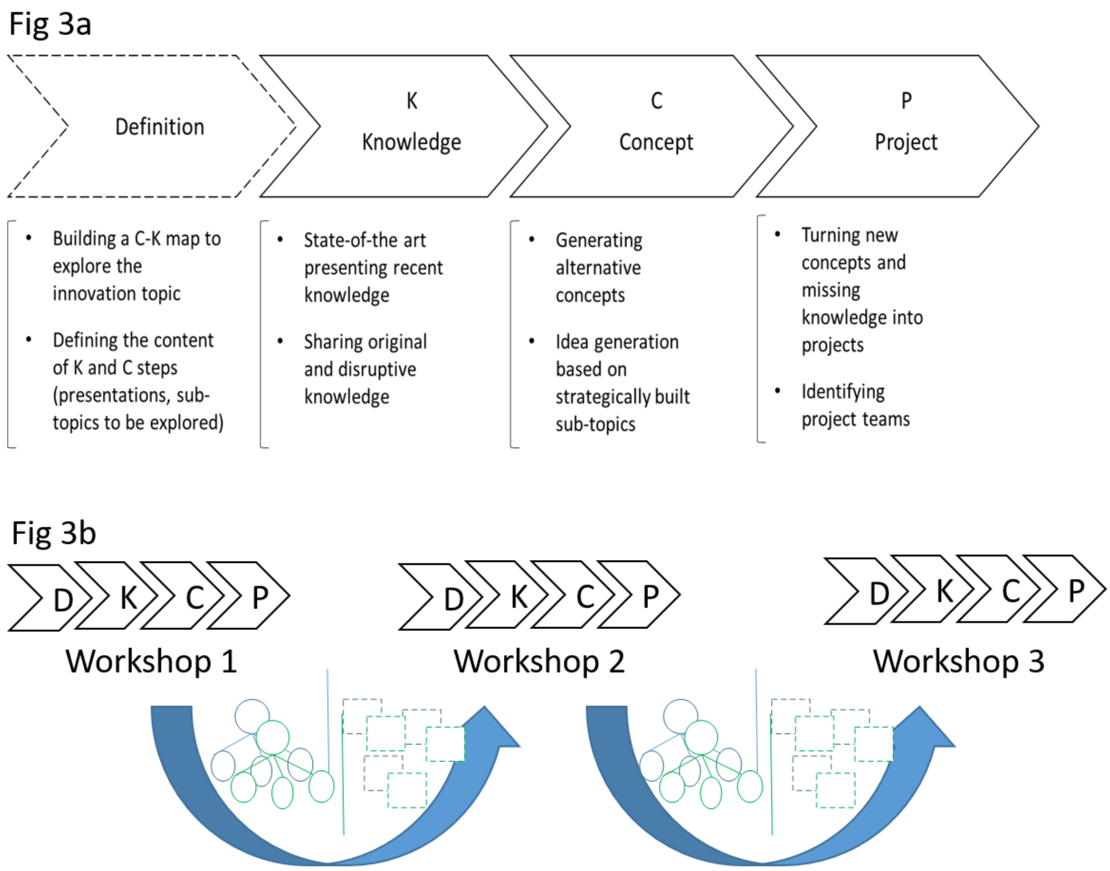


Figure 3. The four main steps of the KCP process (Fig 3a) and the combination of KCP processes and the OPERA method (matching-building C-K maps) to design common purposes (Fig. 3b).

Complementarily, the OPERA method (Gillier et al., 2010) aims at reducing the uncertainty and instability of co-explorations by mapping innovative concepts and associated knowledge that could present a common value for different communities. To facilitate the formulation of common purposes (common concepts of interest for collaboration), participants work on C-K maps in groups during collective sessions and use matching and building strategies to design a new C-K map: Concept and Knowledge matching consists in identifying common concepts and missing knowledge that could be of interest for all stakeholders, while concept and knowledge building consists in developing these paths (Gillier et al., 2010).

In our study, we propose to combine the KCP process – which promotes collective innovative design – and the OPERA method – which promotes the identification of common purposes – in order to design an exploration process that could efficiently help scholars from agriculture and food scientific communities to collectively design new common purposes for collaboration, especially new common research topics (Fig. 3b). The organization of such an exploration process, based on KCP, and the identification of common purposes, are detailed in the following section.

2.2. Workshops to collectively explore the issue of coupled innovation in agrifood systems

A team of four researchers from various disciplines, among the authors of this paper (two researchers in agronomy, a researcher in food ecodesign, and a researcher in innovative design) - called hereafter the steering team - developed an *ad-hoc* design approach to support a collective exploration of common purposes likely to enhance coupled innovation towards sustainability in agrifood systems. First, the steering team invited scientists from the agriculture scientific community (10 researchers skilled either in crop physiology, cropping and farming systems research or in ergonomics and management science) or from the food scientific one (11 researchers skilled either in microbiology, food and process engineering, sensory analysis or in economics or management science). Second, three workshops were held within a short period, between April and June 2018: some researchers were registered in the three sessions, others could only attend one or two sessions. The steering team therefore decided to adapt the content of the three sessions according to the expertise areas of registered participants. Third, the steering team formulated common research topics based on the workshops exploration and validated them in a final collective meeting including most of the workshop participants.

Definition phase. To prepare the three workshops and define their content, the steering team relied on the preparation phase of the KCP process: first, the topic of the series of workshops was defined as "Which knowledge should be primarily produced to develop coupled innovation towards sustainable agrifood systems?". Targeting "coupled innovation" was considered relevant to address both agriculture and food scientific communities. Moreover, starting from the concept, instead of knowledge, was seen as a way of expanding the knowledge base and identifying knowledge gaps which were unforeseeable for each community taken alone (Toffolini et al., 2020). Starting with this initial concept, the steering team initiated a collaborative exploration (as the members of the team belong to different research communities) to identify various and original concept paths, as well as major areas of disruptive knowledge regarding such original paths. This process enabled the team to build a first C-K map, which was then presented to the participants during the workshops to open new avenues. This C-K map was built according to a matching-building methodology (Gillier et al., 2010),

which aims to systematically formulate ideas that could be interesting for two different scientific communities and thus ensure the generation of concepts actually addressing common purposes for collaboration. This first C-K map distinguished four innovation paths, carefully worded to avoid mobilizing specialized vocabulary, thus preventing building paths concerning only one of the two scientific communities, which would have hindered the exploration of common purposes for collaboration: (i) Coupled innovation to reduce waste along the value chain (from agricultural production to consumption); (ii) Coupled innovation to promote local food; (iii) Coupled innovation to enhance (bio)diversity; (iv) Coupled innovation to develop "terroirs". Terroir encompasses a limited geographic area, where a collective generates a distinctive food product, based on a set of cultural features, knowledge and practices (Belmin et al., 2018). This French word is differently translated (local, regional, home produced…), but also used as such in the English literature (e.g. Bowen & Mutersbaugh, 2013). This first C-K map also helped to build specific sub-topics to be explored, which we call "spotlights". The goal of the spotlights is to propose original statements to the participants as a starting point for collective exploration and idea generation during the 3 workshops. These spotlights were formulated from the C-K map: they correspond to specific concepts of the map, or to the merger of two concepts. Moreover, the spotlight concepts were chosen and formulated to open new innovative paths and to offer capacities of common purposes to both scientific communities. The steering team identified 7 spotlight concepts, formulated to guide the exploration: "0-waste" food; A collective catering from 100%-local food; A fridge filled with 100%-local food; A mixture of species, from farm to fork; A plant-based gastronomy; A sustainable terroir; Terroirs to be invented.
The agenda of the three workshops (Table 1) was built to (i) ensure optimal mobilization of the expertise of registered participants, and (ii) introduce knowledge fostering the exploration of coupled innovation and addressing the spotlights. Each workshop was then organized as a KCP process (Fig. 3).

Knowledge-phase. Each session begun with a presentation of knowledge on recent results associated to coupled innovation in the agrifood sector, as well as an introduction of original knowledge (regarding the pool of scientists present in the workshop) related to the workshop theme (Table 1). The aim of these presentations was to provide participants with information that could be used to generate original propositions during the following concept phase.

Concept-phase. After the presentations, participants were invited to generate concepts (Table 1) through a brainstorming session to explore a "spotlight" concept (according to KCP methodology), by subgroups of 6 to 10 people, systematically mixing researchers working in both the agriculture and food scientific communities. The C-phase was completed by a work involving the whole group (Table 1): based on proposed C-K maps resulting from the previous workshops, all the participants were invited to enrich the C-K maps and build new shared concepts (according to the matching-building methodology). Both exercises had the same goal: exploring new ideas regarding coupled innovation and identifying new research questions. While the exploration of the spotlights was meant to foster divergence and ideas generation in small groups, the expansion of the proposed C-K map was led with the whole group to foster ideas organization in a common tool and allowed participants following the progress made along the series of workshops.

Project-phase. When the schedule allowed it, the brainstorming sessions of the C-phase were directly followed by the project phase. Participants were asked to select the most interesting knowledge gaps, and to develop scenarios of possible research projects, of various goals and ambitions (PhD subjects, experiments, collaborative projects, etc.). These research projects will not be detailed here but they supported the steering team in formulating the research agenda.

Table 1. The workshops' agenda.

		Workshop 1	**Workshop 2**	**Workshop 3**
K-phase Knowledge sharing		*Presentation 1* "Designing coupled innovations for the sustainability transition of agrifood systems" *Presentation 2* "Towards more resilient and efficient logistics systems: the concept of Physical Internet"	*Presentation 1* Briefing regarding the concept of coupled innovation *Presentation 2* "Introduction to the concepts of Terroir et Typicality" Presentation 3: "Generative Heritage: Knowledge transmission in cuisine to promote creation"	*Presentation 1* Briefing regarding the concept of coupled innovation *Presentation 2* "Multispecies mixtures in fields: which one for which performance?"
C-phase	**C-exercise (1)** Exploration of spotlights concepts in sub-groups	*Spotlight 1* "A collective catering from 100%-local food" *Spotlight 2* "A plant-based gastronomy"	*Spotlight 3* "A sustainable terroir" *Spotlight 4* "A fridge filled with 100%-local food" *Spotlight 5* "Terroirs to be invented"	*Spotlight 6* "A mixture of species, from farm to fork" *Spotlight 7* "0-waste food"
	C-exercise (2) Expansion of the C-K map (matching-building)	/	Expansion of the initial C-K map with the entire group	Expansion of the C-K map obtained at the end of workshop 2, with the entire group
P-phase Project building		Development of possible research projects from the daily exploration	Development of possible research projects from the daily exploration	Development of possible research projects from the daily exploration

2.3. Literature review to assess the originality of the identified common purposes

After validating and enriching the formulation of the 20 research topics that emerged from the workshops, the steering team compared them to those which were already defined in the literature, in order to assess the extent to which the KCP and Matching-Building approaches enabled the identification of new research topics.

In this aim, we selected a corpus of 25 papers, published between 2011 and 2019, dedicated, at least partially, to identify research priorities in the domain of food systems sustainability. Except for one report from the IPES-food expert panel (2015), all the documents analysed were scientific syntheses or position papers published in international scientific journals. These documents were selected according to three specifications: (i) their focus (the food system), (ii) their angle of view (how to increase food system sustainability?), and (iii) their content being partly or totally dedicated to the formulation of interdisciplinary research priorities, concerning both the agriculture and the food scientific communities. If some authors published several papers respecting these criteria, within the 2011-2019 period, we considered only one of them. To maximise the diversity of views within the corpus, we selected the papers by querying the Google Scholar database, with three series of key-words:

- “food system research priorities”, or “food system challenges”, or “food system alternative research” or “food system transdisciplinarity”: 11 selected papers;
- “food system sustainability transition”, “food system agroecological transition”, or “food system sustainable development”: 6 selected papers;
- “food system”, associated to various, more specific, disciplines or objects: agroecology, economics, crop & landscape, livestock & landscape, health, consumer & ethics, in the view to maximise the probability to catch papers dealing with the topics identified in the workshops explorations: 8 selected papers. Other combinations of these keywords were tried but did not allow to identify new papers fulfilling our specifications.

The first authors of the 24 scientific papers analysed are citizens of 11 different countries, and the articles have been published in 16 different journals, sometimes disciplinary (agronomy, economics, sociology, food science), but most often interdisciplinary, oriented towards sustainable development issues. In the following, these documents, quoted in Table 3, will be referred to as "reference documents".

3. Results: A collective exploration of innovative paths to design a research agenda addressing simultaneously agriculture and food scientific communities

3.1. The creation of a design-oriented collaborative work between the scientific communities

Exploration (C- and K-phases)

During each workshop, after a time dedicated to knowledge sharing, participants began to explore the proposed spotlights in sub-groups (between one hour and one hour and half for each spotlight exploration, Table 1): this exercise allowed to generate ideas through concepts formulation, but also to identify missing knowledge. Between the successive workshops, the steering team organized the explored ideas within new C-K maps. During the second and third workshops, participants also expanded the C-K maps, which allowed to immediately organize ideas they had explored when working on the spotlight concepts. The Fig. 4 presents the results achieved by the participants when exploring one of the main conceptual paths: the concept of coupled innovation that could help promoting local food, its virtue, and its desirability for all. Here, three paths were opened and explored: “coupled innovations that would produce a comprehensive diagnosis of local food systems”, “coupled innovation that would support the transition towards existing local circuits”, and “coupled innovation that would design new value chains for local food”. The exploration of each of these paths was represented by a branch structuring the innovation concepts, such as, for example, several ways of considering the comprehensive analysis of the existing local food chains (left branch Fig. 4) or the diversity of objects that could be redesigned (right branch Fig. 4).

Figure 4. Concepts explored by the participants in relation to the topic “coupled innovation promoting local food, its virtue and desirability for all”.

Final C-K map

The work achieved by the participants during the matching-building step of the successive C-phases allowed to expand the initial C-K map, and especially to add two main innovation paths: coupled innovation reinventing agrifood systems engineering, on the one hand, and coupled innovation developing a symbiotic economy, on the other hand (Fig. 5). The participants also modified the formulation of the four initial main innovation paths. The first level of the final map thus presents six main concepts, which open six main innovative paths (Fig. 5). Both concepts and knowledge generated by the participants were used to formulate shared cross-community research topics (these topics are presented in the next sub-section). Therefore, the three workshops allowed to successfully initiate both a dialog and a collaborative work between researchers in agriculture and food scientific communities. Such collaborative work nevertheless only occurred during the workshops: indeed, the steering team was not mandated to further support the development of cross-community research projects.

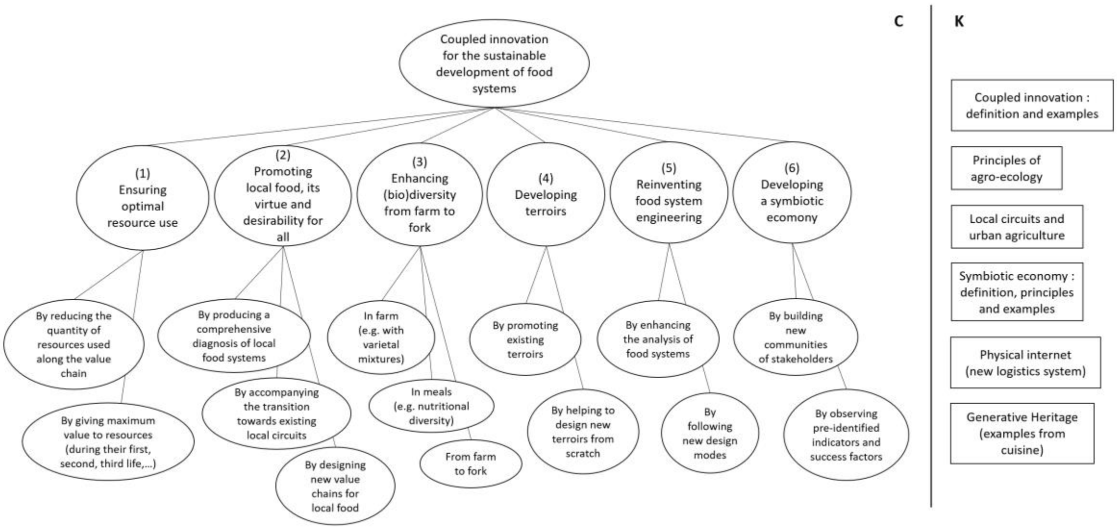


Figure 5. The main conceptual paths of the final C-K map.

3.2. The design of a research agenda based on challenging common purposes

At the end of the three workshops, the steering team selected, for each main conceptual path, three to four knowledge gaps, among those highlighted during the workshops. The selection was based on the following criteria: (1) their investigation had to address both scientific communities; (2) they concerned several components of the agrifood systems, which were rarely studied together until now; (3) they had to appear original in comparison to the state of the steering team's knowledge; (4) during the workshops, members stressed the crucial importance of filling these knowledge gaps to foster coupled innovation processes and outputs; (5) their possible contribution to improving sustainability in the agrifood systems clearly appeared. The knowledge gaps were reframed by the steering team to take the shape of research topics. Thus the knowledge basis taken into account in the proposal of these topics is the basis mentioned by all the participants during the 3 workshops. Twenty cross-community research topics, which could become common purposes for collaboration between the two scientific communities, were thus identified and grouped by conceptual path (Table 2). To develop each research topic (RT), a short text was written by the steering team, based on the workshops' exchanges. This text was used to present the topics during the final collective meeting, for discussion and enrichment.

Table 2. List of twenty cross-disciplinary research topics, addressing expertise in agriculture and food sciences, derived from the design workshops on coupled innovation in agrifood systems, including their link to the main conceptual paths (described in Fig. 5) and a small description.

Conceptual paths	***Research topics (RT)***	***Description of the research topics (RT)***
(1) Ensuring optimal resource use	RT1= Recycling and engineering of waste from food systems for a variety of uses	Waste is generated all along food systems (production, transport, storage, processing, distribution, purchase, consumption), differently according to situations and territories, and involving many different actors: farmers, processing professionals, associations, households, restaurants, and ultimately eaters. Waste engineering could be revisited through innovation coupling, by applying the logic of industrial ecology at all scales of food systems. For example, improving the use of livestock effluents on crops through greater proximity between livestock and field crops, or increasing the recovery of urban wastes, especially those resulting from human metabolism, could greatly increase the closure of nitrogen and phosphorus cycles.
	RT2= Assessment and management of the naturalness of food products, from farm to fork	The concept of naturalness is still poorly defined and its characterization deserves a multidisciplinary analysis (social sciences, agronomy, process engineering, nutrition). Schematically, naturalness refers to the techniques of production (low artificialization of the environment, few inputs) and food processing (minimal processing vs. "ultra-processing"). The demand for naturalness is clearly expressed by a portion of consumers, for products from both organic and conventional agriculture. The development of global indicators of naturalness should promote consumer recognition of products, and innovation in production and processing.
(2) Promoting local food	RT3= Local food as a source of confidence and desirability: effects of production and processing modes, traceability, social link	In a context of globalization of supplies, and industrialization of processing chains, some consumers have lost confidence in food products, and expect a return to local products to boost their confidence, desirability and contribution to sustainable development. The objective of this topic is to identify the conditions for a return of confidence in food products, and in particular the effect of production and processing methods, labelling, traceability, social links and logistics. The multidisciplinary analysis of territorial food systems will form the basis of these investigations.
	RT4= Territorialized Food Systems: new ways of linking production and consumption	Territorialized food systems (TFS) are an alternative to the globalized agrifood system, structured around large industrial firms manufacturing inputs or processing agricultural products. TFS are characterized by a project of territorial self-sufficiency for basic foodstuffs, by a diversification of crop and animal species contributing to the resilience of the agro-ecosystem, and to the reduction of inputs, and by shorter chains between producers and consumers, favourable to a more equitable sharing of value. Analysing the diversity of existing TFS is essential to promote the most sustainable forms, and to stimulate innovation for sustainability. To explore this question, it is proposed to draw on studies on tracking grass-root innovations in food systems.
	RT5= Small-scale processing technologies, sociotechnical	In the perspective of local food development, revisiting food processes addressing small volumes, easily adaptable to the variability of the raw material, is required. A major difficulty is to keep, when moving to a smaller scale, both the economic and

	conditions for their development	environmental benefits of economies of scale, and the control of food qualities (sanitary, nutritional, organoleptic). Studies involving stakeholders should analyse the influence of agricultural practices on the performance of these technologies, and on the conditions for their development, related to the diversity of sociotechnical systems.
(4) **Developing terroirs**	RT6= Tension between innovation and tradition in a historical terroir	The concept of terroir is associated with the image of a typicality stemming from tradition. Especially, Geographical Indications are based on traditional practices, both to delimit terroirs and to define production or processing specifications. However, in order to adapt to market changes and societal expectations, stakeholders in terroirs need to innovate. The objective of this topic is to overcome the tensions between innovation and tradition in historic terroirs, and in particular those characterized by quality signs: how to formulate specifications, on production and transformation processes, that guarantee typicity without hampering innovation? How can innovation be stimulated and managed without restricting, or even reinforcing typicity?
	RT7= Sustainability of terroirs associated with Geographical Indications	Terroir products largely contribute to the trade balance and the reputation of French agriculture. In a context of climate change and increasing societal expectations regarding the sanitary quality of products and the environment, the issue of assessing the sustainability of terroirs is of decisive importance. The objective is to propose multi-criteria methods for assessing the sustainability of terroirs, including their resilience. The challenge is to help stakeholders in terroirs to manage sustainability, by providing them with tools for designing production and processing techniques, and by supporting them to review the methods of governance of their terroirs.
	RT8= Invention of new terroirs and new typical products regarding sustainability issues	Some products considered as typical have been created recently (for example, the Corsican clementine or the quality wines of Languedoc), showing that building new terroirs is not impossible. The implementation of such an approach to invent typical products seems particularly interesting, due to the outlets potentially offered in tourist, peri-urban or urban areas. The objective of this topic is to analyse case studies to define the agronomic, technological, and socio-economic conditions leading to the invention of new terroirs. This invention of terroirs will particularly rely on the design, in open innovation systems, of coupled innovations, technological (in production and transformation), organisational and institutional.
	RT9= Production and cooking of foods with exceptional taste	Nowadays, research studies are scarce on the production and processing of exceptionally tasty foods, even though this issue is at the heart of the concerns of a wide range of actors, from producers to consumers (direct market gardeners, top chefs, artisanal processors, luxury industries and delicatessens, etc.). Questions address the link between the sensory quality of food and production and processing practices. How can we distinguish, produce, and cook these foods of exceptional taste? Exploring this question could be based on cross studies conducted in sensory engineering, in crop quality physiology, and in agronomy, without neglecting the sociological dimension of the construction of food quality.
(3)	RT10= Ecosystem services of multi-species mixtures, from farm to fork	Multi-species mixtures, both in animals and plants, are known to provide numerous ecosystem services. However, the nutritional and organoleptic benefits of the products derived from them, and the technological processes for valuing them, remain poorly characterized. The objective is to design a diversity of mixtures, their management and process, adapted to the diversity of

Enhancing (bio) diversity		farming conditions, aiming at supplying economic and environmental services and nutritional benefits, and to identify the organizational or institutional innovations that could foster growing, processing and consuming species mixtures.
	RT11= Diversity of agronomic and culinary practices of hobby gardeners	Hobby gardening contributes to the diet of a growing part of the population, and could be reinforced by changing consumption patterns (less meat, local products, search for "natural" foods). However, gardening practices, both rural and urban, are still characterized by empiricism and have been rarely addressed by scientific studies. In this context, it is important to co-design and evaluate new ways of cultivation (permaculture, mixtures, etc.) and new domestic processes to enhance the nutritional assets and organoleptic quality of products, while eliminating pesticides and additives. The analysis of the social role of these amateur gardens (social link, income supplement, reintegration) will make it possible to imagine the means for their deployment.
	RT12= Effects of biodiversity of endogenous microorganisms on agricultural production and food engineering	In the field, microbial diversity can increase disease resistance. After harvest, it may contribute to better preservation of products, either by fermenting them or by biopreservation (addition of microorganisms selected for their ability to inhibit the growth of undesirable microorganisms). Understanding the effects of farming practices on endogenous flora and its expression would make it possible to better enhance its beneficial functions by adjusting agricultural and processing practices.
(5) Reinventing food system engineering	RT13= Method for the diagnosis of a food system, in order to determine the points to be improved and the fields of innovation to be explored	The objective is to develop an approach aiming at (i) identifying the actors of a food system (from local to global ones), their roles, networks and strategies; (ii) using an assessment of the sustainability of the food system to prioritize the sources of problems; (iii) identifying the actors of the system likely to be involved in the transition towards sustainability, and the fields of innovation likely to contribute to this transformation. The approach could draw on the findings of the agronomic diagnosis, the diagnosis of socio-ecological systems, the diagnosis of sociotechnical systems, and the proposals for food system analysis.
	RT14= Multi-actor devices and methods to design and assess coupled innovations	Innovation coupling between food production and processing requires mobilizing together heterogeneous actors who worked separately until now, and to coordinate their design processes. However, the organisational modalities of this multi-actor design play a crucial role in the emergence of innovation, both from a cognitive point of view (how to help actors to imagine these coupled innovations?) and from an organisational point of view (how to help actors to work together?). In order to propose new mechanisms for coupled innovation, it will be possible to draw inspiration from studies on co-design, innovation communities, the development of innovation partnerships, or the design of common purposes.
	RT15= Public policies to promote the emergence and development of coupled innovation	The coupling of innovations in the agricultural, agro-industrial and food sectors is far from being spontaneous, due to the historical separation of R&D spheres and power relations between companies. In order to overcome these limits and thus foster coupling, the objective is to renew innovation policies, based on the analysis of the influence of past and current public policies on the innovation process, and by building, together with public authorities, new instruments and mechanisms for action, contributing to support new links between the actors of the food system, including researchers.

	RT16= Indicators to assess and foster transition of food systems	Consumers and other stakeholders need health and environmental indicators of food products, to assess their practices, and to learn how to improve them. The aim of this topic is therefore to analyse the use of health and environmental indicators by producers, processors, consumers, and to design indicators that help them to autonomously develop more sustainable practices. These indicators could be based on hybridized scientific and expert knowledge, as well as on traceability methods and technological sensors (for example to detect harmful compounds or micro-organisms).
(6) Developing a symbiotic economy	RT17= Innovative technologies, jobs and skills for a symbiotic economy	The symbiotic economy is an economy allowing humans and ecosystems live in harmony, fostering beneficial interdependence between stakeholders. Its main principles are the considerably reduction of resource extraction, fair potential access to exchanged resources, enhancement of ecosystem services, and maximum efficiency in the use of resources. Symbiotic economy applied to food systems raises various technological and social questions: does symbiotic economy involve inventing new technologies, at the production, transformation, and logistics levels? What impacts will it have on work, skills, and employment?
	RT18= Articulation between food, ecological and energy transitions on different scales	Improving the sustainability of food systems questions the links between food systems and other sectors (energy, habitat, health…). The compatibility of energy transition (reduction of fossil energies), ecological transition (local resilience, circular economy, GHG reduction), and food transition (towards food security and safety), in a global health perspective, represents a vital challenge. Agronomists, food scientists, and social scientists should work jointly, to prepare the technological, organisational, institutional and social innovations, and to produce knowledge supporting the coordinated management of these various transitions, building on the interdisciplinary multilevel perspective for sustainability transitions.
	RT19= Tensions and synergies between 0 waste, 0 pesticide, 0 antibiotic and 0 additive	The reduction of wastes is a major issue as it currently concerns about 30% of the food produced, which is unacceptable from both social and environmental points of view. Losses may be reduced in the field, with pesticides, in the livestock, with antibiotics, and in the kitchen, with additives. Yet these products are harmful to ecosystems, enhance the emergence of resistance, and threaten human health. The aim here would be to produce food without waste, while respecting ecosystems and human health, from the field to the consumer. Which solutions could be designed and how should they combine technical (e.g. alternatives to chemical solutions, packaging) and organisational (e.g. new partnerships between actors) dimensions?
	RT20= Training and information on the agriculture-food-health relationship within agrifood systems	The transition towards more sustainable food systems requires involving all stakeholders (consumers, industrial firms, producers, authorities). This implies giving them access to relevant data on food systems, educating them, teaching them how to move towards sustainability, and supporting them in changing their practices. This topic should involve researchers in agronomy, food sciences, educational and learning sciences, as well as a diversity of actors, to encompass various questions, such as: How are agriculture and food processing taught to children in school? What is the source of the decline in public confidence? How can this confidence be restored? How can we get a more balanced understanding of health benefits versus detrimental effects?

3.3. Originality of the research topics identified

Table 3 summarizes the similarities between our 20 research topics (RT) and the 25 reference documents. We called similarity a quotation, in one reference paper, of one of the RT resulting from our workshops, even though, of course, the description were not exactly the same: for example, for the RT 19 "*Tensions and synergies between 0 waste, 0 pesticide, 0 antibiotic and 0 additive*", we considered as similar two reference documents that mentioned the need to develop research on the conjunction between waste reduction and pesticide reduction, whereas neither the objective of 0 antibiotic nor that of 0 additive were cited. As well, we considered that the RT 14 "*Multi-actor devices and methods to design and assess coupled innovations"* was quoted in reference documents that identified the need of collective action to foster the emergence of innovations in agriculture and food processing, even though these documents did not insist on the connection between their design processes. Lastly, several papers, focused on a social or economic approach of food systems, cite some of our research topics, as indicated in Table 3, but do not explicitly mention that addressing such research topics would require new collaborations between agriculture and food scientific communities.

Some of our research topics were never mentioned in the reference documents. These are RT 6 "*Tension between innovation and tradition in a historical terroir*"; RT 8 "*Invention of new terroirs and new typical products regarding sustainability issues*"; RT 9 "*Production and cooking of foods with exceptional taste*"; RT 11 "*Diversity of agronomic and culinary practices of hobby gardeners*"; RT 12 "*Effects of biodiversity of endogenous microorganisms on agricultural production and food engineering*". It should be noted that 4 of these 5 questions are addressed to very specific food systems, linked to local products, small-scale cooking or gardening. Thus, their absence in the reference documents is not surprising, as, most often, the articles consider food production as a whole, without describing the diversity of the forms it takes.

Conversely, 6 other issues are raised by more than a quarter of the reference documents. This recurrence reflects the great importance of these issues for the transition of food systems. It is thus not surprising that these issues emerged from our innovative design process, but it must be recognized that our process was certainly not essential to identify them. However, on these issues, our workshops often led to an original positioning, compared to the majority of the reference documents:

- RT 13- "*Method for a diagnosis of food system, in order to determine the points to be improved and the fields of innovation to be explored*" (12 occurrences): all the authors, like us, underline the complexity of this exercise; the participants in our workshops, as a few reference documents, have sketched out ways to formalize this approach;
- RT 20- "*Training and information on the agriculture-food-health relationships within agrifood systems"* (9 occurrences): all those 9 reference documents underline the role of researchers in training and information, but a very small number proposes, as we do, to develop research on training and learning in food systems;
- RT 16- "*Indicators to assess and foster transition of food systems*" (9 occurrences): according to the reference documents, the targeted users of health and environment indicators are diverse (consumers, public authorities, collectives of local actors, etc.); the participants in our workshops stressed on the analysis of the diversity of uses of these indicators by producers, processors, consumers, in order to design indicators that help them to autonomously develop more sustainable practices.

- RT 4- “*Territorialized Food Systems: new ways of linking production and consumption*”: the territorialized food systems are considered in 13 reference documents, as well as by the participants in our workshops, as the favoured alternative food systems; the originality of our proposal is to rely on tracking grass-root innovations to foster generativity.
- RT 18- “*Articulation between food, ecological and energy transitions on different scales*”: few reference documents refer, as we do, to the mobilization of sociotechnical transition theory to analyse the transition of food systems, but 14 reference documents underline the importance of connecting studies on food, ecological and energy transitions in a context of climate change.
- RT1 – “*Recycling and engineering of waste from food systems for a variety of uses*”: Although the issue of waste recycling is addressed in 8 reference documents, none of them deal with the coupling between recycling technologies and production technologies, the importance of which was stressed on in our workshop.

Finally, 9 of our 20 research topics are only mentioned between 1 and 4 times in the reference documents. These topics concern the organisation of the design process (RT 14, RT 15), levers in the development of territorialized food systems (confidence building –RT 3–, small-scale technologies –RT 5–, sustainability of terroirs –RT 7–), or the management of naturalness or biodiversity from field to plate (RT 2, RT 10). The innovative design process, that we implemented, has thus brought to light research topics which, without being totally original, represent gaps in knowledge that can only be addressed with a cross-community approach. The last two research topics set ambitious and original objectives for the evolution of food systems (symbiotic economy –RT 17–, or 0 waste, 0 pesticides, 0 additives, 0 antibiotics –RT 19–), which are potential levers to help overcome fixation effects among researchers.

Table 3. Similarities between our 20 research topics (column 1) and the 25 reference documents (Column 2). The number of reference documents citing each research topic is presented in column 3.

(1) Research Topic	Reference documents citing the research topic	
	(2) Reference	(3) Number
RT1= Recycling and engineering of waste from food systems for a variety of uses	Garnett et al., 2014 ; Ingram et al., 2013 ; IPES food, 2015 ; Lindgren et al., 2019 ; Rivera Ferre et al., 2012 ; Ruben et al., 2019 ; Van der Werf et al., 2014 ; Van Dijk et al., 2013	8
RT2= Assessment and management of the naturalness of food products, from farm to fork	Provenza et al., 2015	1
RT3= Local food as a source of confidence and desirability: Effects of production and transformation modes, traceability, social link	Bowen & Mutersbaugh,2013; Levidow et al., 2014 ; Snyder & Donovan, 2013 ; Thilmany et al., 2013	4
RT4= Territorialized Food Systems: new ways of linking production and consumption	Blay-Palmer, 2013; Bowen & Mutersbaugh, 2013 ; Caron et al., 2018; Duru et al., 2015 ; El Bilali 2019 ; Gaitan Cremaschi et al., 2018 ; Hatt et al., 2016 ; IPES food, 2015 ; Levidow et al., 2014 ; OHara et al., 2013 ; Rundgren, 2016 ; Snyder & Donovan, 2013 ; Thilmany et al., 2013	13
RT5= Small-scale processing technologies, sociotechnical conditions for their development	Blay-Palmer, 2013 ; Thilmany et al., 2013	2
RT6= Tension between innovation and tradition in a historical terroir		0
RT7= Sustainability of terroirs associated with Geographical Indications	Bowen & Mutersbaugh, 2013 ; Rivera Ferre et al., 2012 ; Van der Werf et al., 2014	3
RT8= Invention of new terroirs and new typical products regarding sustainability issues		0
RT9= Cropping and cooking foods with exceptional taste		0
RT10= Ecosystem services of multi-species associations, from field to plate	Meynard et al., 2018 ; Provenza et al., 2015	2
RT11= Diversity of agronomic and culinary practices of hobby gardeners		0
RT12= Effects of biodiversity of endogenous microorganisms on agricultural production and food engineering		0
RT13= Method of diagnosis of food systems, in order to determine the points to be improved and the fields of innovation to be explored	Duru et al., 2015 ; El Bilali, 2019 ; Francis et al., 2011 ; Gaitan Cremaschi et al., 2018 ; Hatt et al., 2016 ; IPES food, 2015 ; Meynard et al., 2018 ; Reardon et al., 2012 ; Rivera Ferre et al., 2012 ; Ruben et al., 2019 ; Thilmany et al., 2013 ; Van der Werf et al., 2014	12
RT14= Multi-actor devices and methods to design and assess coupled innovations	Hatt et al., 2016 ; Meynard et al., 2018 ; Rundgren, 2016 ; Thilmany et al., 2013	4
RT15= Public policies to promote the emergence and development of coupled innovation	Meynard et al., 2018 ; Rivera Ferre et al., 2012 ; Ruben et al., 2019 ; Rundgren, 2016	4
RT16= Indicators to assess and foster transition of food systems	Caron et al., 2018 ; Duru et al., 2015 ; Gaitan Cremaschi et al., 2018 ; Garnett et al., 2014 ; IPES food, 2015 ; Rivera Ferre et al., 2012 ; Soussana et al., 2014 ; Van der Werf et al., 2014 ; Van Dijk et al., 2013	9
RT17= Innovative technologies, jobs and skills for a symbiotic economy	Caron et al., 2018 ; Francis et al., 2011 ; Levidow et al., 2014 ;	3
RT18= Articulation between food, ecological and energy transitions on different scales	Blay-Palmer, 2013 ; Caron et al., 2018 ; Duru et al., 2015 ; El Bilali, 2019 ; Gaitan Cremaschi et al., 2018 ; Garnett et al., 2014 ; Ingram et al., 2013 ; Levidow et al., 2014 ; Lindgren et al., 2019 ; Reardon et al., 2012 ; Rivera Ferre et al 2012 ; Ruben et al., 2019 ; Rundgren, 2016 ; Soussana et al., 2014 ;	14
RT19= Tensions and synergies between 0 waste, 0 pesticide, 0 antibiotic and 0 additive	Ingram et al., 2013 ; Lindgren et al., 2019 ; Van der Werf et al., 2014	3
RT20= Training and information on the agriculture-food-health relationship within agrifood systems	Caron et al., 2018 ; Francis et al., 2011 ; Hatt et al., 2016 ; Ingram et al., 2013 ; Levidow et al., 2014 ; Lindgren et al., 2019 ; OHara et al., 2013 ; Rivera Ferre et al., 2012 ; Snyder & Donovan, 2013 ;	9

4. Discussion

4.1. Originality of the design approach mobilized to foster a cross-community dialog

The identification of a common purpose for collaboration often appears as a necessary condition to build a long-lasting partnership between heterogeneous stakeholders or communities. In research, common purposes for collaboration commonly take a wide variety of forms, such as the identification of relevant areas for data sharing, the development of interdisciplinary research projects, and the sharing of resources, knowledge or expertise (Sonnenwald, 2007). Such common purposes are not always radically innovative. We thus explored a new path to develop challenging common purposes among researchers belonging to different scientific communities thanks to a method based on innovative design (Hatchuel and Weil, 2009). By choosing this method, we deliberately gave preference to build common purposes (i.e., in our case, cross-community research topics) through a reflection starting from concepts rather than from available scientific knowledge. The efficiency of such approach was demonstrated by Toffolini et al. (2020). If several design methods have already been developed to explore challenging common purposes for collaboration in industry (Gillier et al., 2012; Brun et al., 2019), they have rarely been applied by research centers to design new cross-communities research issues to support coupled innovation in agrifood systems. Conversely, other methods used to establish a list of priority questions, such as the iterative voting process (performed by Ingram et al., 2013), based on a list of questions individually asked by specialists, mostly result in disciplinary questions.

While a significant proportion of researchers tend to practice design in their daily work, using design methods to identify new research questions is quite unusual even if some scholars (e.g. Glanville, 1999) consider that research is intrinsically a design activity. Systematically fostering researchers' design reasoning with dedicated design methods could therefore prove to be relevant for the exploration of new ideas and research programs, as illustrated here by using innovative design methods such as the C-K approach (Hatchuel and Weil, 2009; Chen et al., 2017), the KCP process (Elmquist and Segrestin, 2009; Hooge et al., 2017) and the OPERA method (Gillier et al., 2010; 2012). If innovative design methods had recently been applied to develop cross-disciplinary research projects and foster cross-fertilization of knowledge and scientific expertise (Vourc'h et al., 2018; Brun et al., 2019), our work shows that they can also be relevant tools to foster a reconnection between heterogeneous scientific domains, provided that it supports an exploration of objects, which the researchers from various scientific communities can undertake in a joint effort to be disruptive. Whereas building cross-community research projects is often led by a problem-solving approach, we identified research priorities from a reflection aiming at defining the proprieties of a desirable unknown. Nevertheless, if the identification of challenging common purposes could support building cross-community research projects, it does not guarantee that the researchers will pursue a collaborative work to address these common purposes.

We chose to organize our design workshops without involving non-researcher partners (farmers, advisors, industrial partners, water agencies, SMEs, NGOs, consumers, etc.), because we aimed at fostering the building of an internal dynamics in research. We do not claim to have identified the most urgent research topics to develop from the stakeholders' point of view, but topics aiming at building reconnections between scientists from agriculture and food communities. Strengthening our capacity to foster coupled innovation was indeed the perspective of our approach, but, in the short-term, we mainly targeted with this list an effect on research structuring and organization. Opening the design process to stakeholders will certainly be required to develop projects which address some of the challenging research purposes in order to anchor them in innovation processes developed with these stakeholders. If C-K, KCP and OPERA have proven to be generic approaches already successfully applied in various sectors with heterogeneous stakeholders, the inclusion of new stakeholders could however require adapting our design process: the modality according to which such stakeholders should be included constitutes a management issue, as well as a new research question in innovation management.

4.2. Originality of the research agenda

The innovative design process has brought to light research topics, which represent knowledge gaps that are detrimental to the reconfiguration of food systems towards higher sustainability, and which can only be addressed with a cross-community approach. Even though the workshops involved researchers from both communities, they did not only result in knowledge gaps calling cross-community research. However, only common purposes were selected by the steering team when formulating the 20 research topics. We assume that one of the key components to the success of our collective work was that our workshop participants were convinced of the importance to develop research at the crossroad of agriculture and food. This success was not predictable because, as in most research organizations, the two scientific communities mainly work separately, as represented in Fig. 1.

The analysis of the similarities between our 20 research topics and the priorities proposed in the 25 reference documents confirmed the originality of the identified topics. First, several topics were never observed in the 25 reference documents, while we were careful to choose highly diverse documents (selection by various keywords, numerous countries and journals represented…). Second, the workshops often resulted, even for the topics most frequently observed in the reference documents, in common purposes that not only crossed several scientific communities, but also were scientific forefronts. Thus, we propose to the researchers who wish working at the crossroad between agriculture and food sciences, some challenging research topics, both innovative and result-oriented.

No reference document cites all 20 research topics: at most, Rivera-Ferre et al. (2013) mention 7 of them (out of 41 priority issues identified as key insights for future sustainable food systems, from young researchers of various disciplines). Conversely, some priority topics, identified in the reference documents, were not mentioned in our study. Many of them focus on socio-economics items, such as the role of social movements, strategies of firms or international trade. Their absence in our approach is linked with our initial objective to propose research topics interfacing agriculture and food scientific communities to enhance coupled innovation in agrifood systems. The few number of social scientists participating in our workshops was consistent with this aim. As they were used to collaborate with agronomists or food scientists, they were keen to explore how such interface might also impact their own research. Conversely, the absence of animal scientists in the workshops led to the scarcity of questions in this area, whereas the sustainability of food systems addresses important questions about, for instance, the balance between plant protein and animal protein in our diet (de Boer and Aiking, 2018), or the linkage between crops and livestock in the farms and territories (Stark et al., 2016). Similarly, no specialist in food logistics participated to our workshops, which resulted in skipping some important issues, as transport of raw products, or distribution in long and short chains. It is clear that the common purposes resulting from our study depend on the disciplines invited in the workshops. To enlarge the portfolio of priorities, a dynamic management of common purposes could be imagined, based on the replication of such workshops with a larger panel of scientists. Involving various stakeholders will certainly also be of interest to open this portfolio or to give it more accuracy.

5. Conclusion

Based on the observation that the agriculture and food scientific communities were disconnected, and that such disconnections are currently limiting their ability to support or enhance the emergence of innovations contributing to improve the sustainability of agrifood systems, our work aimed at initiating a dialog between these two scientific communities through the design of common purposes for future collaboration. Even if there is today an increasing demand regarding the development of cross-community research projects, finding common purposes for collaboration in science, and especially designing common challenging research questions, still proves to be very difficult without relevant management tools and methods.

In this paper, we explain how we mobilized design theory and methods to support researchers from agriculture and food scientific communities within a given research network in collectively building common purposes for future partnerships. This resulted in the design of twenty challenging and cross-community research topics. The two scientific communities being used to deal with research topics that aim to support the development of innovations in the agrifood sector, this collective design process was organized around the concept of coupled innovation between agriculture and food. This choice helped avoiding the use of vocabulary specific to each scientific community to start building a new shared vocabulary and common desirable concepts. Therefore, organizing a dialog between scientists from agriculture and food communities, according to a method based on innovative design, successfully allowed them to identify new common purposes (e.g. cross-community research topics) for future collaboration addressing the transition of agrifood systems toward sustainability. In this respect, the originality of the paper is twofold: the method itself to generate new research topics, and the research topics emerging from this method.

The next step of this work will consist in building a long-lasting community of researchers, from agriculture and food scientific communities, who could collectively develop these research topics and explore new challenging common purposes. The modality according to which such community should be organized also constitutes a management issue, as well as a new research question (see for instance Thomas and Wind, 2013, and Dubois et al., 2014). Besides studying organizational patterns, consideration should also be given to the potential involvement of stakeholders and the place they should be given in a collective process to prioritize the research agenda.

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