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Social Learning from Co-creation: Cities on an environmental mission

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Abstract

In innovation studies, and particularly those dedicated to agricultural and environmental innovations, there has been a robust stream of research focused on understanding how multi-stakeholder groups learn from their experiences in order to implement and scale-up system innovations. This stream of research has been referred to as social learning and has focused on how groups of multiple stakeholders are able to move system innovations from protected niches into broader scale application within society. Social learning scholars mention the importance of reflexivity when learning contexts are characterised by diverse values, interests and knowledge, such as is found in co-creation processes that include actors from the quadruple helix. Other scholars argue that while the learning process itself is important, it is insufficient for transformational change – particularly when the desired change is at the societal level. A vision of actors from the quadruple helix as givers of meaning to problems, new technologies, social innovations and potential societal impact is thus required. In this short commentary, we reflect upon the linkages between visions, problem formulation and social learning when co-creation is used as a means to stimulate collective work among multiple stakeholders. We reflect upon the promises and the limits of co-creation and the social learning that it catalyses, in the context of environmental missions.

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Introduction

In 2021, the European Union announced the launch of the "climate neutral and smart cities by 2030" mission as a new way of orienting research and innovation in the Horizon Europe funding program. This mission-driven policy is the most recent attempt by policy makers to orient the investment in research and innovation towards resolving what have been labelled the "grand societal challenges" (Randles et al., 2016). Often painted as wicked or "super-wicked" problems (Levin et al., 2012), these societal challenges need a loosening-up of rules and relations that guide actions and practices. Simultaneously, ways of thinking, of problem setting and solving (Wanzenböck et al, 2020), of managing resources and people, and of planning, need to be reconsidered because they are in many ways part of the problem to begin with (Beck et al., 1994). Thus, an emerging scientific consensus argues that addressing these grand challenges implies the need for systems transformation and requires social, economic and technological changes (von Schomberg, 2013; Cagnin et al., 2012; Kuhlmann and Rip, 2014). Such approaches involve new policy rationales and innovation approaches and consequently new approaches for assessing the impact of research and innovation.

It is within this specific context that the MOSAIC project was conceived and carried out. The broad aim of the MOSAIC project is to envision, study and test co-creation processes targeted at supporting a meaningful participation of quadruple-helix stakeholders (i.e., public, private, civic and research sectors). Thus, one of the added values of the MOSAIC process is that the research work involved citizens in finding creative solutions to climate-neutral and smart cities mission objectives. According to our working hypothesis, this type of inclusive process can improve the innovation capacity and build directionality of innovation ecosystems from the bottom-up. The ability to steer innovation processes in the desired direction is fundamental to how societal missions can be achieved (Jenssen et al., 2021).

In this short commentary, we explore how this hypothesis took form and played out as part of an effort to introduce formative evaluation (Molas-Gallart et al., 2021) into a co-creation process (Torfing et al. 2019). We refer to the approach that was used as "co-creation for impacts." We reflect upon what was possible to achieve in such a short period of time and we conclude by linking these learnings to the debates in the sociology of agriculture and food that have focused on city-driven system innovation.

Co-creation as a public space for learning how to innovate for societal impacts

The notion of co-creation first emerged in management sciences as a means to explain the knowledge flow process between stakeholders as partners of the value creation efforts of private companies (Von Hippel, 2005). Co-creation thus became known as the "pro-active strategy for enabling firms to create value through co-opting consumer competences" Durugbo and Pawar, 2014: 4373). When described as a process, authors model it as a set of activities for fulfilling customer needs based on agreements and constraints that are defined by customer, supplier and encounter domains. Here, the key actor that was included outside of the private sector was the infamous "user" of the technologies, products or services developed by the private actor.

In the twenty years since these approaches were first introduced into the private sector, citizen-led initiatives and non-governmental organisations began to employ the term to refer to the social innovations that they were introducing (Klein et al., 2014). Here social innovations, and the use of co-creation processes, were providing goods and services for needs that were not being met by private or public sector actors. In food and agriculture, we can trace this to the emergence of community supported agriculture and solidarity purchasing groups (Chiffoleau and Loconto, 2018) and other forms of prosumption whereby consumers become active producers of value (Podda et al. 2018; 2021).

More recently, there has been a movement towards more participatory approaches in public sector management, whereby citizen councils (Copus, 2008; Lowndes et al., 2001), participatory budgeting (Sintomer et al. 2008) and citizen participation became more widespread, particularly in Europe and Latin America. We have seen this clearly in food systems whereby Food Policy Councils began to emerge to shape city-level planning

for achieving food security and often food sovereignty in urban centres (Blay-Palmer, 2009; Friedmann, 2007). Torfing et al. (2019) commented on the increased use of co-creation by public actors, particularly city-level governments, in their policy processes. They claim that the public sector is "being transformed from a legal authority and a service provider to an arena of co-creation" (p. 795).

Torfing et al. (2019) argue that, in public processes, the flurry of co-creation activities will only be effective if a series of systemic changes are simultaneously introduced. It is in this context the MOSAIC project experimented with the idea to use co-creation activities to help cities envision, plan and implement a city-level mission. In that matter, co-creation included science, policy, industry and civil society actors (i.e., the quadruple helix). The co-creation process itself was set up as three phases that included: 1) challenge definition and stakeholder recruitment (3-4 months); 2) the Gathering (1-2 months); and 3) ideation and prototyping (5-6 months) (Mazzonetto 2023). The innovation here was to situate a co-creation process within the EU mission-oriented programme operated by cities to deliver 100 climate-neutral cities by 2030 (Robinson et al., 2020; Manzoli et al., 2024).

However, the mission-oriented context introduced a number of issues that complicated the situation. First, focusing on a societal mission already means that the goal of a co-creation process is pre-determined to a certain extent. In addition to this, each city interpreted this mission by identifying a specific challenge that they felt needed urgent solutions. This challenge identification happened before the co-creation process started, which meant that while the mission outlined an end goal (i.e., carbon neutrality), the challenges were locally defined as differently as making mobility more sustainable in one particular part of one city and communicating air quality so citizens can make informed decisions about their health in the other. Second, the commitment of a city government to deliver on an externally determined goal means that they are willing to take only limited risks as compared to their normal practices. This means that both the orientation of stakeholders' contributions and the clarity of their own local level vision of intended impacts were quite conservative. Finally, the inclusion of the cities in the EU mission, meant that the co-creation process had to follow the EU timeline. In order for the project to ensure that the cities kept to that timeline, a very tight schedule for the three phases was introduced. For example, only two months were dedicated to phase 3. This did not genuinely allow for deviations, detours or radical imagination.

In order to understand how such processes can thus create societal impacts, we must turn to what has been learned from mission-oriented innovation policy (Robinson and Mazzucato, 2019). For instance, directing research (and innovation) towards a societal mission requires a different understanding and means of assessing the societal impact of research (Matt et al., 2023). As participatory approaches take different knowledges and perspectives into account in dynamic processes, counterfactual controlled impact assessment is not a feasible option. In addition, ex post impact assessment could be useful over time. When cities work on a tight schedule, understanding what knowledge and solutions to prioritize to produce the expected impacts is more useful.

Thus, we introduced formative evaluation within the MOSAIC co-creation process as a way to evaluate real-time impacts as part of a learning process whereby the quadruple helix stakeholders learn from each other (van Drooge and Spaapen, 2022). Formative evaluation is an approach that has its roots in impact evaluation of research and innovation policy programmes (Molas-Gallart et al., 2021). We consequently developed with the project partners, a two-pronged approach that enabled them to (re)direct co-creation participants' problem definition and solutions development towards the specific mission outlined by the city conveners. The drawing of an impact pathway (Matt et al, 2023) was used as the core tool to orient participants and guide their anticipatory actions.

In an ideal process, reflexive revisions of this impact pathway should enable the participants to check their progress towards their goal. If there are deviations, then corrective actions could be taken to either get back on their original trajectory or to establish a new trajectory and revise the networked pathway. While the process unfolded over the period of less than one year, unfortunately, a rushed schedule for activity implementation meant that the formative evaluation exercises were "added on" to a time intensive process that

lasted only 5 months. This resulted in insufficient time being spent on the reflexive and anticipatory activities. However, based on this imperfect implementation, which is actually quite common in reality, we have been able to analyse our experience and offer insights to improve these practices in the future.

Social learning is not (yet) societal impact

In innovation studies, there has been a robust stream of research focused on understanding how multi-stakeholder groups learn from their experiences in order to implement and scale-up system innovations. This stream of research has been referred to as social learning (Gertler and Wolf, 2002) and has focused on how groups of multiple stakeholders are able to move system innovations from protected niches into broader scale application within society. The positive connection between the quality of co-creation processes and social learning has been recognised (Galan et al., 2023). Social learning scholars mention the importance of reflexivity when learning contexts are characterised by diverse values, interests and knowledge (Bos and Brown, 2012; Wals et al., 2004), such as is found in co-creation processes that include actors from the quadruple helix. Specifically, "social learning requires reflection and reflexivity throughout the entire process, if only to monitor change and progress throughout" (Wals, 2007). Reflexivity is thus defined as group's "ability to interact with and affect the institutional setting in which it operates and can be recognised as the emergence of new (semi-coordinated) practices of participants in the initiative as well as their wider networks, and as new associated rules and discourse enabling and constraining these practices" (Beers and van Mierlo, 2017: 418). Such learning therefore takes place in a situation of actors collaborating within and across social networks, in an ever-changing environment. The associated learning processes are fraught with uncertainties, value differences and a diversity of time horizons.

The co-creation activities carried out during the MOSAIC project can thus be characterised as situations that encouraged social learning as part of an approach seeking to define and resolve problems encountered by cities as they seek to become climate neutral. As such, identifying the potential and actual contribution of co-creation activities is important to evaluate whether the investment in co-creation is paying off (and who is gaining from them) and to better design and implement further co-creation activities.

However, other scholars argue that while the learning process itself is important, it is insufficient for transformational change – particularly when the desired change is society-wide (Korten, 2018). The actors in the quadruple helix must also build a vision that gives meaning to the problems, the new technologies, the social innovations and the potential societal impact. This vision, which they acquire collectively during the co-creation process, transforms individual learning into collective learning. The passage from ideas to prototypes, then to actions and impacts is the result of this learning. It is supposed to happen when knowledge (the what), actions (the how) and relationships (the who) become consubstantially intertwined (Beers et al., 2016). It is important to note that this definition yields a rather straightforward distinction between learning outcomes and the real-world actions that possibly follow. However, the question of the impact that such social learning has in terms of system innovation and eventually societal impact remains unanswered in this literature.

Thus, the challenge that the MOSAIC team faced was to develop methods able to improve our understanding of the impact generating mechanisms in the present, in order to assess a broader set of societal impacts in the future. We posit that impacts on complex innovation ecosystems are difficult to trace back to individual sources (they are often a combination of many activities) (Matt et al., 2017; Bozeman and Sarewitz, 2011). However, much work on "impact assessment" of projects is focused on the production of evaluation indicators of individual projects. Hence, the MOSAIC team incorporated a mix of complementary approaches (combining qualitative and quantitative evaluation methods, achieving a multi-objective evaluation, and evaluating impacts at various levels of aggregation) in order to examine the learning outcomes of co-creation activities at individual and collective levels, and contributions to the future impacts of co-creation on a city's capacity to achieve a mission.

We first learned that participation in a co-creation process – where local government is honestly looking for solutions that will help them to reach their mission – does have positive effects on the capacities of individuals to network and to learn new skills from each other. Collective learning was also achieved in one city where the government was able to breakdown their silos and collaborate across departments. For example, creating a plan and actions to achieve the carbon neutral city mission requires collaboration from at least the transport, health, environment and citizen engagement departments. Indeed, the greatest challenge to achieving cities' missions likely lies in this internal silo breaking and not necessarily in mastering the quadruple helix participation. This is a point that definitely requires more research.

We also learned that while important, social learning does not by default lead to impacts – particularly not societal impacts. While the quadruple helix groups learned to work together during the effectively 5-month implementation of the MOSAIC co-creation process, which is important if co-creation for impacts is to be used for the entire period of the mission, it is not clear if this engagement will be maintained. Indeed, while some solutions were found rather quickly to very tightly defined objectives, this was mostly because most solutions were already existing in the city – even if they were not necessarily in the exact same form as the co-created prototypes. One can only assume that additional challenges and obstacles will emerge along the city's trajectory. Without maintaining an engaged co-creation for impacts approach over time, and opening up opportunities to change or exchange the existing solutions and the impact pathways themselves, it will be difficult to achieve the originally envisioned impacts. The recognition of this limitation is important for researchers, public, private and civic actors alike.

Conclusions

In this short commentary, we have presented a co-creation for impacts approach that was introduced in Europe as a means to accompany cities to achieve the mission of carbon neutrality. The major lesson that we have drawn from this experience is that while the participatory exercise did open a public space for social learning, there is still significant work to be done to impact the carbon emissions.

The lessons that we draw from this exercise are important for the sociology of agriculture and food because of the major role that food and agriculture play in both city planning and in mission-oriented innovation policy. Agriculture and the environment are frequently the focus of mission-driven policies where ambitious targets are set to achieve, for example: 30% Organic by 2030, 0 pesticides by 2050, or 0 imported deforestation by 2025. The experiences of food policy councils – that are now networked together under the Milan Urban Food Policy Pact since 2015 – demonstrate that continued engagement is fundamental to systems change. They also demonstrate, and our experience confirms, that breaking down silos in local government is very important to strengthening an innovation ecosystem. However, we cannot simply stop at group level social learning if we are seeking system level change. This means that we cannot stop at air quality or mobility if we are seeking climate neutrality. We must also find new problem definitions for agri-food systems and likewise co-create new solutions that build upon, but go beyond what are already circulating in our cities.

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