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Abstract

This impact paper first addresses how COVID-19 has challenged the European innovation ecosystem particularly the identities and doings of cluster organizations and the maker movement. Second, the paper discusses how the crises created bridges between these different worlds. Finally, we reflect more generally how the crisis might finally push the cluster ecosystems away from the predominant "Triple Helix" innovation model (composed of government, academia and industry) towards the "Quadruple Helix" innovation model (composed of government, academia, industry and civil society).

Keywords: Cluster, Maker Movement, Innovation, Trust, Civil society

How COVID-19 reshuffles the European innovation ecosystem

Since the beginning of the 21st century, European countries have introduced cluster policies to structure and support their national innovation ecosystems (Galié et al 2013, Bonnafous-Boucher et al 2015). Before COVID-19, being a member of a cluster organization was the inescapable place to be for a company that wants to innovate and scale up in Europe. However, the social economy actors (such as for example cooperatives, mutual societies, non-profit associations, foundations, and social enterprises) were quite absent from this ecosystem. Will this change after the crisis is over?

Under the current COVID-19 crisis, the cluster ecosystem is the place to be to have a head start on crucial information, be it about governmental aid programs, funding for urgent needed innovations or how to be useful for disrupted European value chains. However, the fast and agile response from social economy actors quickly challenged the "ivory towers" of innovation. Existing companies were still weighing the benefits and risks of changing their modes of productions while the maker movement was already able to propose innovative solutions (for example protective shields, ventilators) to help civil society, companies, or hospitals to face the crises. However, even though they were quick to innovate, the institutional environment for finding funding or accessing mass production were more difficult. The "European Cluster Alliance" and the "European Cluster Collaboration Platform", crucial matchmakers since the outbreak of the crises, are now actively going towards these "free" and less "institutionalized" social economy actors. Even though their identities could not be further apart, both worlds recognize that they could benefit from each other.

COVID-19, triggering soul-searching for clusters and makers

The industrial policies of the beginning of the 21st century were inevitably linked with cluster policies around the world. In parallel, a more grassroot movement appeared: the maker movement. While the cluster approach is mainly driven by the wish to increase the competitiveness of established companies by improving their innovation capacity, the maker movement is mainly driven by an open sharing culture that focuses on community development and the improvement of society (Capdevilla, 2013). In the academic cluster literature, the amounts of patents registered in each region or the ability of cluster organisations' members to access financial subsidies, are often indicators for clusters' success. This could not be further away from the open source philosophy of the maker movement and their philosophy of a peer-to-peer approach in helping each other improve one's skills and experiment with innovative technologies and production methods.

To schematize, before COVID-19, the cluster approach was already far advanced in its institutionalization process while the maker movement was still in its teenager stage, trying to collectively and openly experiment and explore the world. However, not surprisingly, a pandemic like COVID-19 suddenly propelled the maker movement overnight from a teenager to an adult. Not only their strong philosophy to help society but also their agility and open source approach, allowed them to innovate in a period that was not possible for established companies.

David Cuartielles, the co-founder of the Spanish Arduino platform, the world's leading open-source hardware and software ecosystem, underlines that on day zero of the pandemic

there were three possible options (ECCP Webinar, 2020): Either the governments had the money to obtain existing equipment to deal with the crises (option A); or national companies got help from the public sector to ramp-up production or even modify existing production lines (option B); or finally civic society needed to step in (option C). Extremely fast, it was clear that option A was not enough, and option B was too slow to react. Due to the uncertain temporality of the crises, there was a lack of immediate innovation ability and willingness from companies. Stéphan Vérin, from the French Cluster Euramaterials, for example, explained (ECCP Webinar, 2020) that companies still thought about the bitter aftertaste generated by the Grippe A (H1N1) in 2009. In 2009, companies of the textile cluster in northern France reacted rapidly to the potential pandemic threat by innovating and setting up new supply chains for mass production in the mask industry. However, as the crisis did not unfold, after some months, all government investments were suddenly withdrawn again, and companies closed down or stopped the production of masks as everything moved to China where production was much cheaper.

In March, during the brief time lapse of uncertainty about the magnitude of the crisis, the Maker community started to step in at once. Overnight, they became the distributed manufacturing force to cover the urgent needs of medical professionals, but they also became one of the leading innovators for producing such urgent equipment faster and cheaper. For example, from the middle of March onwards, the volunteer group “Makers for Life” grouped together 250 people to try to conceive a cheaper and quicker way to produce ventilators (Vanzini, 2020). 20 people of this group even decided to group-isolate in the Palace, a local start-up incubator in Nantes, to develop the first prototype of the MakAir ventilator. Helped by the Auvergne Rhône-Alpes Region and the CEA (French public research body), the ventilator developed by the “Makers for Life” community was able to enter the preclinic test period and is waiting now for the green light of the ANSM (French equivalent of the European Medicines Agency) to enter the clinical testing period. Industrials are already ready to step in for large mass-production if the testing proves successful.

This process seems completely upside-down compared to the life within a cluster ecosystem where innovating is more a question of years than of one of months. Before COVID-19, getting funding through, for example, a French cluster organization is very often a struggle of several months (or even years). First, one must become known and trusted by the community through networking and then projects often need several rounds of submissions to be official labelled by a cluster organization and thus eligible for certain government funding. Additionally, the constant fear that during this period somebody else might reverse-engineer one’s idea is often present. However, once a cluster organisation has labelled a project, funding might be considerable. This goes hand in hand with being – from this point on – a trusted “insider”, a crucial element in cluster ecosystems.

The current crisis underlines antagonistic problems within the two universes: agility for the cluster ecosystem and institutionalism for the maker movement. In the past, the maker movement was always proud of being composed out of free electrons that work together and that strive to improve society. Their philosophy is rooted in openness and flexibility without any external influences. However, the current crisis also shows that accessing urgently needed funding is a difficult endeavour when one is not officially speaking with one voice. The maker movement undoubtedly stepped in where nobody else could have. However, David Cuartielles also underlines that this crisis has generated an identity crisis

for the movement and that behind the scene a lot of fighting is going on, in terms of deciding which direction the movement should go (ECCP Webinar, 2020).

The agility and openness of makers might bluff the cluster ecosystem and the institutionalism of the cluster ecosystem might bluff the maker movement, but for both universes the current crisis might be the start of a soul-searching in the coming months. Since March 2020, the European Cluster Alliance (ECA) has created a small bridge between these two universes to learn and gain from each other.

ECA, building bridges between antagonistic worlds

In September 2019, during the Regional Economic and Diplomacy Summit in Warsaw, the European Cluster Alliance (ECA) was officially launched *"to give Europe´s clusters a common voice and promote the inter-cluster collaboration"* (ECCP News, 2020). The ECA is a bottom up initiative, launched by European national cluster associations (for example from France, Spain, Hungary, Romania) and currently grouping together 13 national cluster associations representing more than 740 European clusters organizations. The objective of the ECA is to generate *"synergies in collaborative approaches and speaking with a stronger, joint voice both at European level but also in dialogue with national and regional policy makers to seek more effective, fact-based policies to support the competitiveness of their members, in particular SMEs, through the use of clusters"* (ECCP News, 2020). The ECA operates in addition to the two more top down associations, namely the European Cluster Excellence Association (ECEA), focusing mainly on appraising and labelling European clusters, and the European Cluster Collaboration Platform (ECCP), concentrating mainly on mapping, connecting and supporting European clusters to find global partners.

However, nobody could have predicted that this newly-found association would play such a crucial role in the near future. On the 28th of February the ECA chose its board of directors and elected Antonio Novo Guerrero (chairman of the Spanish federation Clusters.es) as president. From March 1st, beginning with Italy, European countries, one by one, introduced restrictive measures and lockdowns to try holding back the pandemic. Conscious of the important role the cluster ecosystem can play in fighting the pandemic, the ECA agreed to create the European Alliance Against Coronavirus on the 23rd of March and launched it only three days later. A record for institutional reactiveness. On the 27th of March, Antonio Novo Guerrero, the association's president, started daily one-hour morning videoconferences, 7 days a week, and has not stopped since then. Convinced that the crises can only be tackled by openness and a shared leadership approach, all types of experts (coming from different universe such as civil society, clusters, social economy, public administration, academics, etc.) are free to participate and express needs or potential solutions to tackle urgent issues. With a very structured meeting framework, but at the same time with a very open and inclusive approach, ECA tries to tackle immediate needs (such as key technologies) but also back to work, skills & educational, funding or flexible value chain issues.

For example, EuraMaterials, the French Textile cluster, presented its experience of handling the crisis on the 2nd of April during one of the ECA's morning meetings. One day later, the president of EuraMaterials had been contacted by the president of the ECA to send details about the new French regulations regarding masks. On the 8th of April, the Spanish Ministry of Industry published an official regulation enabling the French standards in Spain. A real success of reactiveness for such a young association (ECCP Webinar, 2020).

The European Alliance Against Coronavirus brought a large spectrum of actors around a virtual table that didn't necessarily know each other or how to interact. The urgency of the situation allowed to put institutional and ideology barriers aside to participate in solving a common global crisis. Quickly learning from best practices in Europe and creating purpose-driven European networks were at the center of their preoccupation. ECA, thanks to a very engaged president, was able to create trust among the various distributed actors. Trust, which can be defined as *"the mutual confidence that no party to an exchange will exploit the other's vulnerability"* (Sabel, 1993) is normally difficult to create in economic spaces.

Historically, the cluster literature allocates a particular role to the managers that are animating cluster ecosystems to create bridges and relational glue between normally competing actors (Colletti, 2010). In the case of the ECA, this might be true as well. Two elements are particularly interesting and important to underline. First the ECA agreed to create the "European Alliance Against Coronavirus" in the middle of March where the word "cluster" is not visible. This underlines their wish to have a shared leadership approach, particularly integrating the social economic sphere as well. Second, the current president of the ECA is Spanish and in Spain the Maker Movement is particularly active and strong. Creating a bridge and link between the maker movement and cluster ecosystems was thus possibly easier than under other circumstances. Both elements might have facilitated the creation of small bridges between the maker movement and the cluster ecosystem.

Moving from a Triple Helix to a Quadruple Helix innovation model?

Since the launch of cluster policies in the 2000s, the main objective has been the development of breakthrough innovations by promoting interaction between universities, industry and government. This idea stems from the "triple helix" model (Leydesdorff & Etzkowitz, 1998) where governments foster innovative environments that are favorable for valorizing and commercializing research and development from university spin-offs. The university and public laboratories became pivotal players in fostering knowledge-based initiatives through collaborations with (and between) firms (small and large) operating in distinct sectors and at different technological levels.

However, this triple helix model now seems, little by little, outpaced and less in line with the open innovation strategies of firms, which increasingly integrate not only other organizations but also users in their innovation process. Thus, instead of speaking of a triple helix (Leydesdorff & Etzkowitz, 1998), Carayannis & Campbell (2017) propose the notion of a "quadruple helix" by adding users to the triple helix model. Within the quadruple helix, users are at the heart of innovation and innovation is meant to be at the service of civil society. This requires an open innovation strategy to stimulate user-driven design collaborations. However, for cluster ecosystems that are historically based on a triple helix model and often guided by patents and closed research circles within their established ecosystems the question of openness towards civil society and the social economy is difficult to tackle. The question of the future might be how to sustainably create a cluster ecosystem that is actively based on a quadruple helix model. A question that cluster managers will definitely need to address in the future is how cluster ecosystems can properly integrate civil society and social economic actors in their ecosystems, allowing them to express their agility without overwhelming them with the cluster's bureaucracy.

Conclusion

COVID-19 has led to a reshuffling of the European innovation ecosystem. The Maker movement, be it in Spain, France or elsewhere in Europe, was able to innovate in a record period of time to address urgent societal needs (for example ventilators, face shields). These free maker electrons had an agility where more institutionalized entities could not have followed. However, the free electrons were not able to speak with one voice which prevented them to access funding and support easily. The current crisis showed that both universes might need each other in one way or the other to advance tackling future challenges.

The deployment of the quadruple helix model, which had already started within certain clusters before COVID-19, has certainly accelerated since the start of the crisis. As the ECA example shows, a shared leadership approach seems particularly important to generate trust and collaboration across different universes. Additionally, we can observe that the major health and societal crisis is giving rise to an accelerated movement of deinstitutionalisation of clusters (for example ECAs informal daily morning meetings which are all recorded and accessible for whomsoever wishes) and institutionalisation of civil society actors (for example maker movement participating in the European Cluster Collaboration Platform Webinar).

In any case, after political responses from European countries were initially somehow not aligned and disorganized, civil society actors and cluster ecosystems were able to engage very quickly in a search for European solutions. Thanks to the framework provided by the ECA, they did not hesitate in working together across borders on a European level. An encouraging sign that our European identity is functioning at the roots and that this identity will survive in a post COVID-19 future!

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