

POLICYBRIEF FROM SWEDISH ENTREPRENEURSHIP FORUM

COLLECTIVE ENTREPRENEURSHIP, GRAND AND NICHE CHALLENGES, AND DIGITAL TECHNOLOGIES' ROLE



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Collective entrepreneurship, grand and niche challenges, and digital technologies' role

Claire Ingram Bogusz

Abstract

Collective entrepreneurship is both desirable and on the rise. It allows for complex responses to grand challenges through coordination, and mobilisation in the face of niche challenges, pioneered by heterogenous actors. Digital technologies, notably blockchain-based ones, and associated practices make collective entrepreneurship easier and a viable possibility even for bootstrapped ventures. But they also challenge the importance of a single firm and the relevance of a single country's jurisdiction. Policymakers should therefore consider how collectives involve a delicate balance between interests, and adapt both the incentives they promote and the limits that they place accordingly. Crucially, entrepreneurs as individuals usually want to be seen as "legitimate" where they have a physical presence. Although regulators cannot hope to govern an entire (global or digital) system set up and maintained by a collective, they can make legal compliance clear and easy, and set *de facto* normative standards for actors in other parts of the world.

Introduction

Much of my research has looked at entrepreneurship and innovation closely connected to a very specific digital technology: the blockchain. Like other digital technologies, the blockchain can be understood in entrepreneurship not just as an important new tool, but also as something that can change innovation and entrepreneurial processes entirely. Blockchain-mediated entrepreneurship (sometimes, although not always, called web 3.0) is also increasingly an extreme and illustrative case of a class of digital technology-mediated entrepreneurship that is deserving of academic and policy attention: collective entrepreneurship.

Collective entrepreneurship has its roots in the democratisation of entrepreneurship, for instance, in raising financing from investors from across the globe through crowdfunding, or creating new products in moments by “forking” code from one project to start another. This sharing of resources is, however, just the start: digital technologies, and the blockchain especially, facilitate innovation and entrepreneurship that can 1) respond to larger challenges, for instance those that are very complex and require diverse knowledge, 2) facilitate mobilisation in response to a niche challenge that requires coordinated action, and 3) allow for the collective management of resources under conditions of competition or distrust.

The organisation of innovation and entrepreneurial activities so that they are pursued by a collective rather than an individual actor (whether a firm or individual) is itself not new. However, the scale and scope of societal challenges that we currently face have been argued to be so large that they require collective, coordinated action (c.f. Doh et al., 2019). At the same time, digital technologies not only allow for the coordination of collective activities in new ways, making coordination itself easier, they also allow for new kinds of collective activities. Some of these technologies, like forums and code repositories, allow for new ways for people to coordinate a collective, while other technologies—like the blockchain—allow coordination to be “managed entirely through protocols that are encoded and enforced via smart contracts rather than human managers” (Murray et al., 2021, p. 625). Crucially, ease of access to these technologies means that the collective activities that they mediate are democratised and accessible not only to deep-pocketed firms or entrepreneurs, but also to enthusiasts and early-stage bootstrapped initiatives.

What do we know about coordinated collectives?

Research points to three kinds of reasonably well-understood coordinated collectives that pursue entrepreneurial activities. In pre-digital times we thought of these as being either as ecosystems or as commons. Increasingly, the importance of digital technologies for these collectives has meant that we might also understand them as being digital infrastructures, with a focus not just on coordination processes and resources (as in the case of ecosystems and commons), but also technologies themselves.

Here, by *ecosystem* I mean a loosely coupled collective of individuals or firms organised around the pursuit of a goal, where they combine their knowledge and assets in order to realise that goal, and share the risk involved in pursuing that goal (Adner, 2006; 2017; Dattée et al., 2018). The goal might be entrepreneurial in nature, or it might be to produce an innovation (or both, given the overlap). This ecosystem could be limited to a single industry, or it could be limited to geographic boundaries, for instance a region or country. Typically, an ecosystem is comprised of many actors but is organised or led by a single actor or firm as an orchestrator (Lingens et al., 2020; Ritala et al., 2013). An

example in Sweden today might be Drive Sweden, an innovation orchestrator that has built an ecosystem around digitising the country's transport system.

By *commons*, I refer to a collective that come to exist in order to protect and manage a pool of resources where there are incentives for individual actors or firms to either actively use the resources in the common (leading to their depletion), or for actors to passively do nothing as others use/manage the resources in the common known as "free riding" (Ostrom, 1990). Collectives come about to manage and protect these shared resources—and they put into place rules and systems to enable this. Often these ideas around commons are based on studies of rural societies and finite natural resources (c.f. Fournier, 2013), but they are also beginning to be understood in terms of digital commons, where digital resources like code are shared (and governed) by collectives (Curto-Millet and Corsín Jiménez, 2022; O'Mahony, 2003). An example of such a loosely coupled constellation of interested actors is one that maintains online code repositories, for instance an open-source library of importance for software that builds upon Javascript.

Lastly, by *digital infrastructure*, I refer to a loosely coupled collective of both people and firms and digital artefacts (including platforms) that are so ubiquitous and relied upon that they are "taken for granted". Often, although not always, these infrastructures come to be in a bottom-up, distributed and iterative fashion (Monteiro et al., 2013), but even those infrastructures that are initially orchestrated by a single actor are later added to and evolve through distributed and iterative processes (Henfridsson and Bygstad, 2013). Examples here include the internet itself, but also more delimited digital infrastructures like e-Health infrastructures, or even digital platforms that are rendered infrastructural by virtue of their importance, as Google search has come to be. Much of my own research has looked at digital infrastructures built on the blockchain in this way (Andersen and Ingram Bogusz, 2017, c.f. 2019; Ingram Bogusz, 2018; Ingram Bogusz and Morisse, 2018; Ingram and Morisse, 2016).

What is collective entrepreneurship good for?

While the researcher in me observes that these collectives are interesting on many levels, when it comes to innovation and entrepreneurship, there are three main reasons why coordinated collectives are useful.

Complex challenges requiring heterogenous knowledge, and thus more than one actor. Ecosystems, for instance, come to be in order to combine knowledge and existing assets that already exist, without the enormous effort of trying to recreate them anew. For an ecosystem, the innovation challenge lies in how to combine them—where recreating resources anew would not only prove prohibitively expensive, it would create new sources of uncertainty. Where there is a central orchestrator, this actor guides the process—and perhaps even may have some control over the outcome. However, this central

role may mean that the actor benefits disproportionately or bears more risk than other actors, which adversely affects both its own and others' incentives to get involved in the ecosystem. Ecosystems in which there is no central actor—where benefits and responsibilities are shared equally—are therefore an important, but under-researched alternative. However, shared ownership has implications both for control and guidance during the process, and for the resulting innovation, what is done with it, and who benefits from it.

Challenges too uncertain or wide for a single actor to manage. This could be because one individual actor cannot exert enough authority or set (and enforce) rules, necessitating a collective in the case of a commons. However, it could also be that the challenge cannot be tackled one-off, but rather is likely to change and evolve over time, requiring an open and evolving constellation of actors, with different knowledge and motivations as important at different stages.

A collective approach overcomes distrust, and concretises existing trust. Many have observed that societies have become more polarised, and there is global concern about the concentration of power in too few hands. Despite this, however, actors are often obliged to work together. Consider, for instance, competing firms who find themselves collaborating in order to realise a larger project for the reasons mentioned above. The move from competition to cooptation, or even cooperation, is often motivated by the desire to expand a market—which individual actors would be unable to do on their own—or respond to shared threats (Ritala and Hurmelinna-Laukkanen, 2009). These actors may not trust each other, or even distrust one another.

Trust and shared ideologies are not uncommon in collectives either, and they influence which challenges entrepreneurs seek to solve, and how they seek to solve them. My own research, for instance, has pointed to the ideological tension between Bitcoin entrepreneurs, despite their reliance on the blockchain as a shared infrastructure (Ingram Bogusz and Morisse, 2018).

In both instances, operating as a collective allows for shared control over both process and outcome, so that no single actor can steer how an innovation is pursued, or used, or by whom. Paradoxically, although exogenous motives may prompt the formation of a collective, the alignment and sharing of risk and rewards, where everyone shares in the risk of realising an innovation or running an entrepreneurial venture and subsequently gains, can also lead to the formation of trust.

The role of digital technologies in collectives

Having examined how collectives make sense under different conditions, I turn now to discussing how the presence (and capabilities) of digital technologies makes collective entrepreneurship easier. In particular, digital technologies simplify both the coordination

and formation of a collective, and make it possible to work as a collective on both grand and niche challenges.

Easier coordination in collective entrepreneurship. Digital technologies have long been used in collective endeavours that are purely code-based, with open-source software the most common example used. However, the widespread use of version control software used to coordinate software development (e.g., Github) has also become widely used in non-software endeavours, for instance in the drafting of documents online or iterations of online marketing campaigns. Other software, for instance forums—whether on social media or as standalone software like a Discord server—have also facilitated coordination.

Digital technologies an alternative to contracts and governance. Contracts can, depending on how they are interpreted, either be a signal of distrust (Lumineau, 2014), or insufficient to mitigate existing distrust. This is because there is a distinction between a contractual agreement and the execution of the contract: the latter may need to be enforced by a third party. Technology-based arrangements, however, merge agreement and execution. Technologies, and distributed ones in particular, allow for the automatic execution of agreed-upon arrangement, and their design and implementation can be done so as to keep the technologies outside of the control of any single actor. This precludes dishonesty by the parties to the contract, as in the case of so-called “smart contracts”. Where there is no specific contract, but rather a general management problem akin to those that occur in commons (where resources are shared), a more complex digital organisation comprised of multiple smart contracts, for instance in respect of voting rights or to align incentives, might be needed. This latter solution is characteristic of so-called distributed autonomous organisations (DAOs), which use blockchain technologies.

Democratisation of collectives through access and open source. Both ease of access to these technologies themselves, and norms around sharing and open access mean that it is not just that coordination among collectives is made easier, but the ability to create and maintain is also made easier. This is because digital technologies do not just allow for the pursuit of collective initiatives, but also allow people to find others who are like-minded, and to find others from within a global community.

Moreover, sharing of software code, whether in whole or in part, not only means that would-be entrepreneurs can find one another, but also that they can make use of existing (open source) code when building a solution to a problem or working towards an innovation. Among open-source code users, it is commonplace to re-use code that others have created and then repurpose or build upon it (e.g., Andersen and Ingram Bogusz, 2019). This makes it easier for entrepreneurs to get started in general, but also means that tricky parts of product development, for instance specialised knowledge of

particular technologies, or even just debugging, can be avoided by reusing and building upon tried and tested code bases. Both the open source licences used and norms of reciprocity in these communities are such that individuals then either share the resulting new code or, where they have made improvements or changes to the re-used code, send those changes to the administrators of the originating repository in what is known as a “pull” request.

Mobilisation and coordination of responses to both grand and niche challenges. Lastly, just as finding likeminded collaborators is made easier when mediated by digital technologies, so too is identifying—and responding to—a challenge in need of an innovative response. When it comes to grand challenges, drawing on distributed assets and knowledge allows for mobilisation and a coordinated response through recombination. However, just as distributed actors allow for shared activities in pursuit of innovation and entrepreneurship, responding to a niche challenge that occurs seldom in any one place also becomes viable in a collective. This is because even a niche challenge may become entrepreneurially viable where there are many distributed instances of it, although this may require that multiple actors work together to respond to that challenge using market mechanisms. This is analogous to the so-called “long tail” of product offerings—a product that caters to a niche customer or market would not be viable if an entrepreneur could only access a single, small market. However, it becomes viable when an entrepreneur’s product can easily reach the many small customers for the niche product across the globe (Brynjolfsson et al., 2006).

Characteristics of collective entrepreneurial endeavours

So how, then, does one identify collective entrepreneurship? Not only does collective entrepreneurship involve multiple firms and actors, it typically does not have a central coordinator or orchestrator, but rather is coordinated collectively. Sometimes these collective activities are agreed upon *ex ante* in a contract, or the entrepreneurial process is far enough along that market information can be used as the basis for decisions not only around coordination, but also around governance within the collective (see Murray et al., 2021).

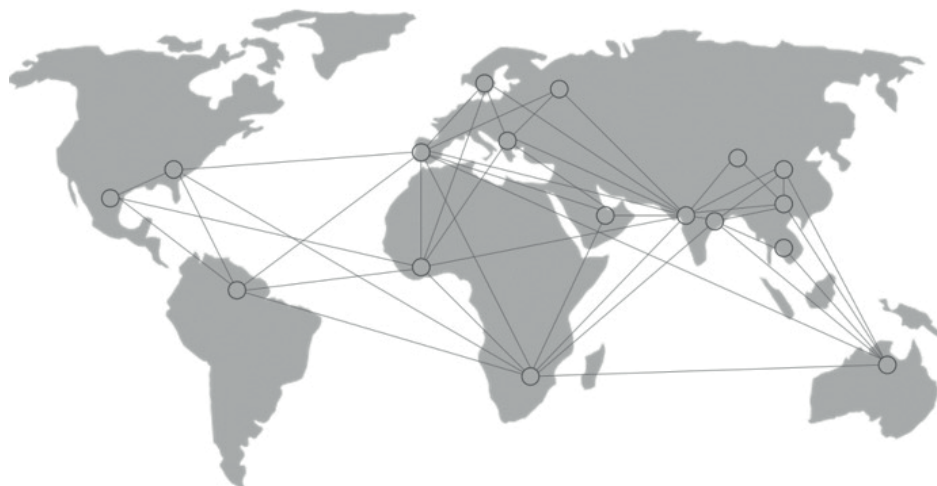
Collective entrepreneurship overcomes distrust and operationalises shared passions. Actors instead find other ways to work together despite distrust, or where they balance their distrust against their shared interests. One way to do this is through the use of shared artefacts, for instance by automating processes so that no individual actor undertakes them. This has long occurred by, for instance, holding assets in escrow. However, such contracts—and more complex ones—are made possible by using (typically distributed and blockchain-based) smart contracts. However, these shared artefacts may equally come about not in response to the absence of trust, but as a way to operationalise a shared passion. Studies point also to the presence of *shared identity and ideology* in such collective arrangements, both when collective entrepreneurship is not-for-profit (e.g.

Stewart and Gosain, 2006), and when it is economically motivated (e.g. Ingram Bogusz and Morisse, 2018). These elements of identity and ideology are particularly important when one considers that the collective entrepreneurship model does not presuppose that any single firm or individual has full control over the entrepreneurial or innovation process. Instead, shared ideology create trust.

Collective entrepreneurship may also occur *across geographical boundaries, or even with little or no physical activities—where all entrepreneurial activities are digital*. It is this trait that allows for responses to both grand and niche challenges: grand because the scale of the response is proportionate to the scale of the challenge, and niche because a coordinated response to a niche but global challenge can make responding to it economically viable.

Where a collective is global, however, it may be hard (or impossible) to identify where ownership and responsibility should be allocated, making it hard to untangle which laws apply, when and to whom (if anyone) (see Figure 1 for an illustration of what such a collective might look like). The democratic nature of many of these collectives is such that there may not even be an intermediary that is a natural point at which coercion or regulation might occur.

FIGURE 1: AN ILLUSTRATION OF A GLOBAL, DISTRIBUTED COLLECTIVE ENTREPRENEURIAL ENDEAVOUR



It may also be that such collectives are entirely digital, with no official physical presence (for instance in the form of a registered firm). This occurs where digital processes, activities and products are the sole focus of the collective. A particularly relevant instance of this today lies in the creation and stewardship of either digital services (like smart contracts) or

“digital assets”, often involving a DAO. These infrastructures, developed piecemeal and over time, exist almost exclusively in digital form—as software that creates, verifies and manages services and assets that exist exclusively in the form of code. Assets can take the form of digital currencies, like crypto currencies, digital art, or the rights and ownership of other digital forms, for instance a (digital-only) house in a digital metaverse.

Policy implications and challenges

Among collectives that are active only in digital or distributed contexts, questions of ownership and responsibility, which are often attributed to an individual or firm, are both challenged and take on new importance. Even the relevance of a formal firm for studies of, and policies related to, entrepreneurship can be questioned. For policymakers, taking into account the features of collective entrepreneurship and the importance of the digital will help in the formation of policy that supports and encourages collective entrepreneurship—but also holds entrepreneurs to account.

Examine incentives and support for collective entrepreneurship

First, collective entrepreneurship is important. One consideration is that the formation of an entrepreneurial collective responds to the belief that many of today’s challenges are not solved through simple or individual products, but rather require system-level shifts that are either large in scope or complex and evolve over time. This recognition is welcome, and policymakers that have an interest in solving both grand and niche challenges should consider collective entrepreneurship to be an important possibility when it comes to encouraging activities that respond to the grand or system-level challenges like climate change and inequality. Swedish agencies and actors are known for starting ecosystem initiatives like Drive Sweden and KOMET,¹ but these ecosystems still have a focal actor with considerable influence. Incentives and support for collective initiatives may be hard to articulate, but could be rewarding.

A particular problem that Swedish authorities are facing today lies in where, and how, data owned by public agencies should be stored. Much of the discussion today is around who should be responsible for the data—with the assumption being that it should be a single agency. However, both the scale of the problem and the risks involved suggest that a collective initiative might make sense. The democratisation of collective entrepreneurship does not just mean that bootstrapped initiatives can engage in collective entrepreneurship—state agencies can too.

Second, there may be a mismatch between incentives and regulations that focus on focal actors and these collective arrangements. Existing incentive structures and

1. Kommittén för teknologisk innovation och etik, which operates as a focal actor in discussions around the ethical use of technology, including for system-level changes.

regulations are directed at individual actors, for instance registered firms where there is clear ownership and responsibility for a project or system. Both innovation and research funders, for instance, often specify that projects should have a “leader” or “owner”, and that organisations should be of certain types—for instance private firms or universities. While this makes sense in many cases, it excludes nascent collective entrepreneurship by defining it out of eligibility. Moreover, focus on a focal orchestrator may disrupt a delicate and negotiated balance and undermine collective entrepreneurship. Policy makers that seek to incentivise particular kinds of projects, especially ones that insist on ownership and a single vision for impact, may be wise to consider that a collective may be as desirable as a firm under certain circumstances.

Avoid trying to force a square peg into a round hole

Third, collective entrepreneurship is complex—and delicate. Although innovation that responds to grand challenges necessitate diverse knowledge bases and complex constellations of actors, these complex constellations often have competing incentives, different priorities, and are quite likely to come from different parts of the world. Aligning these different priorities might be possible through contracts where actors decide *ex ante* what to do in certain situations, but it is not guaranteed. When attempts to collaborate are tentative and experimental, pressure from policymakers to fit such delicate arrangements into existing focal-actor-centric templates may undermine or even stop them.

For instance, a digital-only collective is a type of organisation or firm, despite its lack of formal registration with a legal authority. However, the hierarchical nature of firm registration requirements in most countries, including in Sweden, means that a DAO structure, for instance, is inconsistent with a firm structure. Given the governance benefits of a collective structure like a DAO, it would make sense to consider how, and if, they can be better recognised by regulators—without forcing them to change their nature.

Focus on harmonisation, but also on clarity

Lastly, and paradoxically, where collectives are international—and where they are digital-only—the importance of the physical is of renewed importance. Unlike products and services that can be reduced to something digital-only, neither individuals nor physical hardware can do the same. For policymakers wanting partners in collaboration, they need to focus on these physical presences rather than on the system as a whole. An excellent example lies in the recently passed Markets in Crypto-Assets (MiCA, EU 2019/1937): here, European regulators demonstrate that it is not possible to try to create regulations that apply to an entire system (in this case, crypto assets). Instead, they have focussed on both creating clear, harmonised rules for entrepreneurs and firms (or nodes) within the jurisdiction of the European Union, but also on the importance of creating norms around responsibility for actors operating in crypto asset markets, perhaps setting *de facto* standards for elsewhere in the world.

Like multi-nationals before them, the ability to “jurisdiction shop” is open to members of collective entrepreneurial endeavours. Both my own and others’ research has pointed to how many entrepreneurs, as individuals, want to be seen as legitimate (Ingram Bogusz et al., 2019), but that they sometimes cannot figure out what being legitimate entails, especially when legal or normative compliance is complicated. However, having clear rules around how to operate collective endeavours can actually attract individuals and collective initiatives; some DAOs today register themselves in Switzerland as “associations”, both for reasons around legitimacy and to legally enshrine their independence and collective operations.

Sweden today is increasingly thought of as an unfriendly place for entrepreneurs whose work is mediated by the blockchain. This is in large part because banks seem to be taking a heavy-handed approach to cryptocurrencies, and avoid dealing with them. This is perhaps understandable, given the anti-money laundering laws (AML) they are obliged to comply with, but a shame given the centrality of blockchain to collective entrepreneurship. A significant step forward for those blockchain firms based in Sweden would be clarity around how to be legitimate—and AML compliant—and this might even attract foreign blockchain and collective entrepreneurs—as has happened in other countries, including Switzerland (and, interestingly, Slovenia).

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Regulations

Proposal for a regulation of the European Parliament and of the Council on Markets in Crypto-Assets, and amending Directive (EU) 2019/1937

