CHAPTER 7

Beyond Open Source Agriculture

Abstract This final chapter attempts to expand the idea of alternative technological trajectories beyond the scope of agriculture. Meaning technologies built not within the capitalist mode of production logic but from the emerging commons-based peer production mode. It maintains that for a genuine transition to a different mode of production, a shift into the underlying rationale of technology needs to also take place. This book is an attempt to apply this line of inquiry in agricultural technology.

Keywords Commons • Cosmolocalism • Design global manufacture local

Not since the proliferation of capitalism has there been a more challenging alternative to capitalist technological systems. Even socialist regimes imported technology and management methods that, in some aspects, were more aggressive than capitalism. For example, the Soviets employed industrial agriculture methods that mirrored the American ones (Fitzgerald 2003). The cases in this book provide insight on how democratised technological processes may look like. But what would be the conditions for this experience to be recreated elsewhere? After all, individuals in both cases indicate that their aspiration is for their activity to evolve into a global, organically developed, network of technology communities. This chapter discusses an emerging alternative mode of production, exemplified

C. Giotitsas, *Open Source Agriculture*, Palgrave Advances in Bioeconomy: Economics and Policies,
https://doi.org/10.1007/978-3-030-29341-3_7

by the democratised technologies of the case studies, which could provide the conditions for this goal.

The truly emancipatory potential of ICT has yet to be realised. And it may continue to be the case until it is applied in a production and organisation mode other than the capitalist-industrial one. The ICT has, however, made grassroots cooperation and information exchange possible on such a scale that it enables the emergence of new production models through its appropriation by technological communities. "Commons-based peer production", a term coined by Yochai Benkler (2006), is in tune with this potentiality, not as a directly competing mode but rather as one emerging from within capitalism. This type of production is distinguished from the capitalist mode of production because it involves distributed structures and its productive output is a commons. That is communal resources, administered by a community based on mutually agreed upon regulations and norms. The commons here are of the non-rivalrous nature (knowledge, code) whose multiple use does not deplete its value. In fact, it increases it.

While capitalism adapts and adopts distributed and open source forms as well, commons-based peer production boasts a qualitative change rather than a quantitative one. In this sense, it questions the basic mainstream economics mantra that humans seek maximum individual profit maximisation when engaging in productive activities. It also challenges the conventional organisational structures of property-based, market-regulated, hierarchical organisations.

An organisation and production system for commons-based peer production is described as "design global, manufacture local". The basic features of its framework are described in its name. It bypasses the industrial blueprint of restrictive intellectual properties and global logistics feeding into scaled economies (Kostakis et al. 2015). Instead intellectual property is openly accessible with knowledge creation produced in a global scale. Manufacturing takes place locally, often through communal infrastructures and with the specific local context under consideration. It endorses the circular economy concept and rejects the decoupling of inputs-outputs and their externalities. Thus, production is oriented towards sustainability and well-being rather than economic growth. The role of information and small-scale fabrication (both precision tools like 3D printers and laser cutters as well as more affordable traditional equipment) technologies is obvious for this configuration to be feasible.

Initiatives like the ones discussed here are interconnected in a global commons network. Digital communing enables them to exist both locally

and globally—digitally and physically. In a sense, instead of scale-up, they scale-wide. By designing globally and manufacturing locally, communities and individuals exercise "cosmolocalism", as opposed the capitalist version of cosmopolitanism (Ramos 2017; Bauwens et al. 2019). The commons appear to be point of convergence for the wide variety of, seemingly dissimilar, projects. It provides a clarified political, economic and cultural space for collaboration. This is evident in the cases examined in this book as well. People I spoke to have been appropriating the commons as a strategic term to engage with other communities that may not be active in the same field as they but share similar views against the incumbent mode of production. L'Atelier Paysan and Farm Hack have a local orientation and impact while they share their intangible resources as a global digital commons. L'Atelier Paysan and Farm Hack have connected and created synergies by improving the same digital commons. They are emblematic cases of cosmolocalism, as the pin factory of Adam Smith was an emblematic case of the nascent cosmopolitan capitalism.

Nevertheless, capitalism is extremely successful at adapting and capturing common resources to lower its operational costs, so how would this emerging mode be allowed to flourish? There have been various proposals to ensure the reciprocity cycle towards the commons, both legally (like open source licenses modified to provisionally allow free use only for applications that add to the commons (Bauwens and Kostakis 2014)) and organisationally (in the form of open cooperativism that include stakeholders in all levels of management and are geared towards the common good rather than profit (Pazaitis et al. 2017)).

Taking the argument further, I posit that radical technological change (meaning the democratisation of the underlying technological base) would also be necessary. And for this to happen, we need to have a critical evaluation of the democratic deficit of contemporary technological systems as well as the development of alternative technological artefacts whose conception is based on a clearly defined set of values. Values that are different from those of efficiency and profit.

Several critical theorists of technology have highlighted that technical, beyond merely economic, elements have been incorporated in modern industrial systems to exert control over those directly working with the technology of production (Noble 1986; Beniger 1986). As Feenberg (2001, p.182) puts it, "the rights of workers must be structured into the design of production technology at the expense of control, not purchased at the expense of efficiency". In other words, the codes embedded in the

technological artefacts and systems should reflect values, goals and interests that are exemplifying a substantive democratic orientation, besides the obvious argument of open source artefact design being available to everyone. Alternative conceptions of technology ought to be actively promoting democratic goals such as equality and political agency, rather than simply successfully challenging established technology within the framework of market rationalisation.

Commons-based peer production presents the capacity for such alternative technological systems as it is discussed through the cases of this book. This is due to the characteristics of this type of small-scale farming as well as the easily identified points of contention of the agricultural system it is pitted against. These farmers are not operating under the contemporary labour regime as it has been formulated over years in the capitalist industrial production model. Their interests and goals are much less fragmented than those of their peers in other productive sectors. Moreover, their awareness, regarding the underlying rationale of the technology they are being offered by the market, is heightened because they experience its consequences directly. The technical codes calcified within the market model are influential in commons-based peer production initiatives in other sectors, reducing their emancipatory power.

Farming, as conducted in these cases, is much like all professional farming today, entangled with market relations. Yet farmers have a long history of creating, maintaining, adapting and even sharing in a limited capacity their technology according to their needs and desires. The advent of high-tech, large-scale agriculture has severely limited this practice, but it did not disappear. Either by maintaining it through strong cultural ties (as in the French case) or by slowly rediscovering it (as in the USA case), farmers use the new ways to communicate and collaborate to elevate their centuries long traditions. The technical codes in the farming systems, practices and technological tools employed in both cases may be viewed as a radical reassertion of excluded values, in a much more globalised context, which can form the foundation for a substantive change in agriculture.

This is evident in the technology that exhibits certain particularities which set it apart from mainstream technology. Of particular interest are the stabilisation and closure mechanisms in the artefacts developed within the movement. While market-based technology tends to follow the trajectory observed in multiple SCOT studies, here artefacts remain purposely flexible with only temporary and conditional stabilisation. This marks a break from the theoretical conceptualisation for the development of novel

technological artefacts, which may be attributed again to the core element of this research project. The interactions amongst individuals and groups are not primarily driven by profit but are built on the aforementioned set of values. These dictate that the tools need to be adaptable, easy to fix and intercompatible to match the needs and operational capacity of their users as well as provide optimal utility in a high-risk and antagonistic environment. Closure is, in this context, moot.

The technological action frame is then what guides these initiatives through adverse conditions while avoiding cooptation or loss of their radical vision. Thus, in the French case where it is, relatively, easy to secure funds, the frame ensures that the intense activity around technology development retains its strong focus on the values of the movement (openness, sustainability and autonomy). After all, as Fabrice pointed out, their organisation is a political project, not a service. The frame also informs the expansion of the development model towards horizontal, small-scale structures rather than responding to the demand for scaling in a vertical way. On the other hand, in the USA, the frame cautions against employing tactics to secure funds which dilutes the radical vision and, as Kristen put it, "changes the nature and spirit of the work". It also provides the (open, low-maintenance, distributed and collaborative) structure and the tools to continue producing alternative technology tapping onto those resources and partnerships which are, to quote Severine, based on a culture of commitment and respect in a situation where there's little to no money.

In this context, open source agriculture lies squarely within the design global, manufacture local/cosmolocalism framework. Previous research on the topic tends to gloss over the local aspect and focus primarily on the sexier global connectivity aspect. This book sheds light on the messy local manufacturing capacities as well. Developing and building a tool for specialised farming practices is not an easy task. The level of expertise amongst those involved is very wide. It may vary from "grizzled" farmers with extensive experience (both in manufacturing and farming) to "greenhorns" eager to acquire skills. When conditions are favourable (resource-wise), activity can wield impressive results. Diverse people aggregate in the same space and produce a complex piece of machinery within a brief timeframe with knowledge transfer taking place in a thoroughly organic way. It is the frame, meaning the set of values–beliefs and tacit knowledge, which informs and enables this capacity. As far as the discussion around commons-based peer production is concerned, this offers an insight regarding the adaptation of the mode in the different productive sectors

and locations. The specific dynamics, idiosyncrasies and historical collective knowledge of any potential case need to be accounted for and integrated in the organisational and productive process to ensure viability and a radical output. A simplistic, one-size-fits-all viewpoint does a disservice to the suppressed, by the capitalist productive imperatives, capacities of grassroots communities.

The above may sketch out the blueprint for how a new technical base for society can be formulated, one that will allow workers at least some control over design decisions for the technology they manufacture and use. It may also show how to bridge the gaps and build solidarity amongst different social groups with different technological experiences and interests. After all, agriculture, as the most basic element of the primary sector, presents "fertile ground" to "plant the seeds" for change in the highly complex and interdependent techno-socio-economic system. The polar opposite of technical innovations introduced by more powerful actors in the advanced sectors dictating how the base is transformed. Dorn offers the example whereby if you think civilisation as a tree then agriculture is the roots and the population is the trunk. Arts and commerce are the branches, and if they break, they may regrow because the roots are intact. If the roots are attacked, then the system withers and dies. An apt metaphor for the current technoeconomic system attacking (altering) its roots with destructive consequences.

Taking a cue from Feenberg's call for the bridging of grounded empirical research and macrolevel analyses, this book looked into the structural considerations within the case study. A comparative view of the two subcases provides enough evidence for the effect of economic, political and cultural factors in the form of each organisation. These structural elements are accordingly noticeable in the technology development models affecting the way individuals cooperate to produce new artefacts as well as the intensity and distribution of activity. The role of the state more specifically seems to have a profound impact in this regard. Whenever the state tolerates this kind of fringe activity or even (primarily in the French case) supports it, then production is allowed to flourish. It struggles when obstacles are present either in the form of direct hostility towards such initiatives on a policy level or as calcified technical codes that come into conflict on a value-driven goal level.

At any rate though, farmers still manage to find ways to produce technology which allows them to sustain themselves according to their beliefs and values. Frequently, contrary to the homo economicus mantra of maxi-

mum utility and profit. This kind of behaviour cannot be explained away with the notion that technology follows certain paths according to the increase of efficiency in strict economic terms. This, as they will be quick to point out, has always been the norm in agriculture. Up until the advent of capitalist, industrialised technology anyway. At the individual and very local level, of course, many farmers managed to still maintain their independence and expertise on their way of doing their work. But it was the development of ICT that permitted larger-scale exchange of knowledge and cooperation. That is, to a degree which could now provide the capacity for a shift in the underlying technological rationale in society. Or at the very least, a vision for a potentially more democratised alternative of technology, technology that would allow its users to impart their personal values into its development towards a more sustainable and egalitarian version.

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