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The logo for the International Institute of Social Studies, featuring the word "Erasmus" in a stylized, cursive script.

**Tinkering farming imaginaries:
Technology reappropriation, sharing and tinkering by
peasant farmers and L'Atelier Paysan in France**

A Research Paper presented by:

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Acknowledgements

HERE

Ha petra ‘soñjez, bran du ?
Uhelwintet er saprenn
Ha petra ‘soñjez, bran du ?
Emaout o spiañ ar Glenn...
Daoust ha te ‘wel ‘tu pe du
Nevez-hadet un dachenn ?
Ha petra ‘soñjez, bran du ?
War skourr hebleg ar saprenn.

Poem from Anjela Duval (1963)

SOWING

And what are you thinking, black crow
Perched high on the pine tree
And what are you thinking, black crow
Are you surveying the land
Do you see high or low
A newly sown field?
And what are you thinking, black crow
On the pliant branch of the pine tree?

Translated by Lenora Timm

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List of Acronyms

AP	L'Atelier Paysan
CF	Confédération Paysanne
DJA	Dotation Jeunes Agriculteurs
FNSEA	Fédération Nationale des Syndicats d'Exploitants Agricoles
FPE	Feminist Political Ecology
F/OSS	Free and Open Source Studies
FS	Food Sovereignty
GAEC	Groupement Agricole d'Exploitation en Commun
ICT	Information and Communication Technology
ISS	Institute of Social Studies
POLMA	Politique de la machine agricole
RP	Research Paper
STS	Science and Technology Studies
TS	Technology Sovereignty

Abstract/ Résumé

This research papers looks at technology reappropriation, sharing and tinkering by peasant farmers and the cooperative L'Atelier Paysan in France. I focus on everyday practices, emotions and situated and embodied knowledges to explore how peasant-driven technologies and collaborative knowledge production may contribute to shape alternative – or contesting the dominant – farming imaginaries. The concepts of access, open access, sharing, tinkering, bodies, space/place, property, subjectivity, care and user/designer inform my encounters with peasant farmers in Brittany and the cooperative. I attempt to bring into conversation three fields of studies, namely free/open source, science and technology and feminist political ecology to 'thicken' and nuance critical analysis. Lastly, this work follows postdevelopment thinking and is grounded in (re)thinking 'doing' research more ethically.

Ce travail de recherche porte sur la réappropriation, le partage et le bricolage (tinkering) des technologies par des paysan.ne.s et la coopérative L'Atelier Paysan en France. L'accent est mis sur les pratiques quotidiennes, les émotions et les savoirs situés (situated) et incarnés (embodied) afin d'étudier comment les technologies paysannes et la production de savoirs communs peuvent contribuer à la formation d'imaginaires agricoles alternatifs. Les concepts d'accès, de l'open access, du partage, du bricolage, du corps, de l'espace/du lieu, de la propriété, du sujet, du 'care' et de l'utilisateur.trice/concepteur.trice permettent d'analyser les échanges et les expériences vécues avec les paysan.ne.s en Bretagne et L'Atelier Paysan. Le cadre théorique se construit sur trois champs d'études, soit ceux du free/open source, du science and technology et du feminist political ecology. Enfin, ce travail entend contribuer aux pensées du post-développement et s'ancre dans un esprit en réflexion continue vers des pratiques de recherche plus éthiques.

Relevance to Development Studies

This RP joins the flourishing literature on alternative and bottom-up initiatives in peasant farming that questions the standardization and privatization of technology in farming and food production. It draws from post-development critiques of Global North countries and development discourse for performing, competitive and optimized farming systems. The current agricultural model in France is still today highly dependent on fossil-fuels, low-cost international seasonal workers, chemical inputs (pesticides and fertilizers) and seeds firms. Nonetheless, small-landholders and peasant farmers are up to today resisting and “re-emerging” in both the Global South and Global North. Some collective alternatives, such as the one discussed here, are emerging in new spaces, i.e. cyberspace, and contesting on-going 'enclosure' with sharing and open access. This RP recognizes everyday practices, emotions and situated and embodied knowledges as transformative for more resilient, ecological and humanized ways of producing food.

Keywords

Peasant-driven technologies, sharing, tinkering, knowledge reappropriation, know-how, feminist political ecology, science and technology, free/open source, L'Atelier Paysan

Introduction

1.1 What is this research paper (RP) about?

Figure 1
Ready to plant cabbages



Source: author (2020)

It is mid-morning, the air is warm and dry, but the sun has not reached its zenith. I walk with Claire, who is completing a week internship at the Kerlou farm as a requirement for her agronomy studies, towards the plot where we are about to plant around 500 seedlings of cabbages (Figure 1). Anaïs, one of the peasant farmers of the farm, joins us rapidly with the small red Renault tractor. Behind the tractor is the “*planteuse*” (seedling transplanter) attached, a compact steel structure allowing to plant two rows of seedlings at the time simultaneously. Two persons will be sitting on the “*planteuse*” while being pulled by the tractor driven by a third person. I am excited about this task even if it is repetitive, may have a fast-pace and sometimes may be uncomfortable. Transplanting seedlings requires bending forward in a seated position which can trigger muscle aches after some time. I encountered the “*planteuse*” for the first time a few weeks earlier on another farm, where I had also planted cabbages. We were at the heart of the transplanting fall crops’ season. I am fascinated by the amount of time saved and efficiency achieved through the mechanisation of the task. Anaïs aligns the tractor in front of the plant bed. I sit immediately on the “*planteuse*”, ready to lay a seedling every thirty centimetres for the next 50 meters. Anaïs looks at Claire and me, ponders a moment and unexpectedly suggests that we take turns driving the tractor. Her concern for our comfort and trust in new persons on the farm - and unfamiliar with the tractor - surprises me. Indeed, we will be driving in a straight line at a very low speed and if there is a problem, Anaïs can react immediately. Still, her proposition resonates for me with her statements of having tools on the farm that “can be used by all”. Driving a tractor suddenly became a less

exclusive and skill required task. As an outsider of the farm, I could also drive this iconic symbol of agriculture.

This RP is driven by my curiosity for collective initiatives and practices of knowledge(s) sharing in the areas of food and farming. This RP topic emerged from continuing discussions with close peasant farmer friends¹ in Brittany, the Western region of France. Our nurturing conversations around alternative and more inclusive practices for small-scale organic farming have led me to the French cooperative L'Atelier Paysan (AP). Initiated by a collective of peasant activists in 2009, AP advocates for the development and use of peasant-driven technologies which support peasant farming practices that are more “local, resilient and ecological” (Petitbon and Drulhe 2019: 6). For the past decade, the cooperative has been co-innovating, developing and sharing methods and practices around ‘peasant’ technologies that are *by* and *for* small-scale farmers across France (L'Atelier Paysan n.d.c). Their activities involve publishing and sharing peasant innovations, accompanying peasants in the technology development process and facilitating collective learning spaces and activities. Hitherto, more than 80 tutorials on peasant-driven technologies, farm buildings and techniques have been published on their website (<https://www.latelierpaysan.org/>). The peasant-driven technologies are addressed to multiple forms of agricultural production, such as animal husbandry, winery, baking, vegetable gardening and forestry. AP facilitates around 300 days of training workshops yearly. These training workshops, based on peasant farmer’s request² last between 1 to 5 days and cover topics ranging from the construction of a specific peasant-driven technology, metalwork skills, tractor maintenance, software tools as well as thinking about technological autonomy. Such activities are made accessible through regional and national funding. Also, the cooperative’s network and partnerships are diverse and comprise academic researchers, civil society groups, peasant farmer collectives and unions. With these partnerships, AP broadens its spectrum of action by conducting actively and collaboratively research on agricultural development and the social and political dimensions of agricultural technology (L'Atelier Paysan n.d.c). For instance, AP has been lately considering the gender dimension in agricultural technology use and innovation. It has observed the limited participation of women during its training workshops and is concerned with proposing greater support and accessibility to its activities and technologies. It has been conducting collaborative research to understand better the persisting social inequalities and gendered relations within the sphere of agricultural technology (L'Atelier Paysan 2020; Saugeres 2002). And so, AP posits that by collectively reclaiming farming knowledges and skills, peasant farmers can achieve self-sufficiency with their tools and machinery on their farms. The cooperative summarizes this responsible and critical use of technology with the concept of “technology sovereignty” (TS) (L'Atelier Paysan n.d.b). TS follows the grassroots peasant movement’s narrative of “food sovereignty” (FS) (Desmarais in Giotitsas 2019: 58). Like FS, TS encapsulates critical positions towards conventional food systems, top-down policies, such as ‘food security’, and on-going “enclosure processes” (Kloppenborg 2010) and advances for greater autonomy “for local peoples to control their own food systems” (Whittman 2011: 87) and diversity of farming practices.

This RP intends to explore in which ways peasant farmers, who identify as such³, are (re)learning and imagining alternatives farming models and practices with AP and peasant-

¹ *Gouzoug* in Breton means “neck”.

² Apart from their recent long training program “*S’installer avec l’approche collective des technologies paysannes*” (To start a farm with the collective approach of peasant technologies)

³ The term “*paysan*” and “*paysanne*” (peasant, nouns are gendered in French) in France comprises multiple imaginaries. It has been replaced with modernisation by the term “*exploitant agricole*”

driven technologies in France. I will discuss how collaboration, sharing, reappropriation and access contribute to the peasant farmer's sense of autonomy, capabilities to use and tinker agricultural technologies. The focus is on emotional, embodied and situated knowledges and everyday practices by peasant farmers that participate in shaping alternative – or contesting the dominant- farming imaginaries. Based on insights gathered through my discussions, I want to share and analyse their situated, embodied, and gendered stories and learnings with peasant-driven technologies in a context of on-going “over-dimensioning, over-indebting and over-investing” pressures in agriculture (InPACT 2016).

To do so, I will bring into conversation theoretical and conceptual components drawn from three field of studies, namely free/open source studies (F/OSS) (Carolan 2018; Elliott and Scacchi 2004; Giotitsas 2019; Nascimento and Pólvara 2016; Nicolosi and Ruivenkamp 2013), science and technology studies (STS) (Jasanoff 2004; Jasanoff and Kim 2015; Kline 2003; Lindsay 2003; Oudshoorn and Pinch 2003) and feminist political ecology (FPE) (Clément et al. 2019; Elmhirst 2018; Harcourt et al. 2015; Nightingale 2013). This RP joins emerging publications of open source agriculture, peer-to-peer production and digital agricultural ‘commons’ (Carolan 2018; Chance and Meyer 2017; Giotitsas 2019; Mazé et al. 2020; Pantazis and Meyer 2019).

1.2 When agriculture modernisation shifts to digital

“Il faut que le matériel soit un anti-corrée, soit pas, soit pas un gadget!”

(The material [equipment] needs to be an anti-chore, not a, not a gadget!)

Jean-Pierre, a retired organic peasant farmer, Riec-sur-Belon

My conversation with Jean-Pierre, who is a retired organic peasant farmer after thirty years of farming and today is a trainer at AP, featured several stories of misuse of recent tractor models. We talked about his learning processes regarding mechanics, and he explained how he learned a lot by tinkering with equipment with his modest means at the time. Our discussion then shifted to an anecdote of a recent Massey Ferguson tractor that was purchased with a ‘good deal’ by an agricultural college. The tractor was equipped with GPS and other ‘gadgets’ as he added. The dealer had offered a good deal to the school as a marketing strategy for ‘future clients’. However, on its first use, it suddenly broke down. It was unclear how it happened. A student was about to sow seeds, and the 15 tonnes machine broke down in the middle of a muddy field. Jean-Pierre laughed reminiscing the scene. He cried out that an expert came over several times, but never managed to identify the problem and fix the tractor. After multiple failures of identifying the problem, it was sent back to the dealer. He commented that *“c’est une erreur, parce que ces machins là, d’avoir personne à les réparer...”* (it is a mistake, because those things, no one knows how to repair them...). His concern about the unsuitability or absence of knowledges and skills to repair agricultural machinery and reliance on technical expertise illustrates some contested issues around the expansion of technology in agriculture in the 21st century. Indeed, Jean-Pierre’s anecdote evokes concerns about farmer’s autonomy and access, not only in financial terms, but also as capabilities, to

(farmer or translated as farm operator/manager). Being a *paysan/paysanne* may be associated with being from a remote area or being “backward”. In other cases, it has been reappropriated by individuals, collectives and unions that contest the dominant conventional farming model. All participants of this research paper identified as such, except of one who prefers to say that he *“joue à la ferme”* (plays farming) rather than being a *paysan*. Indeed, he does not want to claim the latter term, considering his recent farming, rather big gardening as he describes, activities, which he has started three years ago.

agricultural technology. It also raises questions on *who* these technologies are addressed and for which farming models and futures (Carolan 2020)?

The “*Lois d’orientation agricole*” (agricultural policies) in the 1960s allowed France to reach “food security” within two decades and more importantly to modernise its agriculture and rural areas (Coleman and Chiasson 2002; INPACT 2017; Barral and Pinaud 2017). The French and European policies, in particular the Common Agricultural Policy, oriented towards increasing productivity, efficiency and expansion of land holdings encouraged ‘viable’ farming units, based on “relatively homogeneous, full-time family farm” (Coleman and Chiasson 2002: 174). Such farming units were supported with greater access to land, equipment modernisation, education and loans, at the cost of small peasant farms (ibid.). These policies, norms and regulations have led to a drastic decline of the farming population, which currently constitutes less than 1,8% of the total active (working) population (Insee 2019). Yet, the French State defends agriculture as a successful and competitive sector. In 2018, France held the highest agricultural production value in Europe, of 69 billion euros (Agreste 2019: 8). In 2013, 9 out of 10 farmers had at least one tractor (ibid.: 23). Lately, in the context of climate change, the French state adopted new agricultural policies for an “agroecological transition” (Ministère de l’Agriculture et de l’Alimentation 2016). It posits that the environment, economy and farmers are central for “productive, optimised and performing” (ibid.) farming systems. Moreover, technology and biotechnology innovations need to be considered to achieve such transition in the agricultural sector. In 2016, the “*Programme Investissement d’Avenir en perspective*” (Investment Program for Future Perspective) was launched, granting 10 billion euros for public research and education and entrepreneurial innovation and development in digital, robotic and biotechnologies in agriculture (Ministère de l’Enseignement Supérieur, de la Recherche et de l’Education 2016).

From a critical agrarian studies' perspective, as elsewhere in the industrialised countries, the French state's discourse and policies for agriculture modernisation since the mid-twentieth century, has led to accumulation, expansion and standardisation of farming practices and the commodification, dispossession and privatisation of farmers' knowledges on seeds and technology, but also on animal genetics and fertilisers, animal pharmaceuticals and other agricultural inputs (Giotitsas 2019; Levins and Cochrane 1996; Mann and Dickinson 1978; McMichael 2013; Van der Ploeg 2009). Capitalist accumulation in agriculture, also proposed as “accumulation by dispossession” by D. Harvey (2003 in Kloppenburg 2010: 368), is furthermore significantly shaped by the commodification of intellectual property and claim for exclusionary intellectual property rights and license (Giotitsas 2019: 4). Cochrane’s theory of “technology treadmill” (Levins and Cochrane 1996) depicts the on-going competitive environment and technical and technological change in agriculture. Industries introduce performing and costly machinery, which farmers, stranded on a treadmill, perpetually must upgrade to improve their income and compete. Giotitsas (2019) also advances this “enclosure process” and techno-capitalist structure dependencies by depicting the high concentration of agricultural technologies and inputs within a small number of (mega) firms. Indeed 50% of mechanical inputs would be controlled by only four companies on the global markets (Fuglie et al. 2011 in Giotitsas 2019: 4). Hence, the outgrowth of this intellectual property regime affects all stages of agriculture and hinders farmer’s dimensions of autonomy and resilience (L’Atelier Paysan n.d.; Giotitsas 2019; Nicolosi and Ruivenkamp 2013; Van der Ploeg 2014).

Moreover, technological development and innovations in conventional farming are featuring new trends of ‘smart farming’ or precision farming (Carolan 2018; Fraser 2019). Agricultural equipment is developed with multiple sensors which collect information of the farm, i.e. data, which creates large datasets (“big data”) to be analysed, and predictive farming models (boyd and Crawford 2012: 663). The digitalisation of farming may involve greater access to information and communication and more “smart-farming” models (Carbonell

2016; Relf-Eckstein et al. 2019). On the one hand, the greater access, i.e. as faster and cheaper, to information through information and communication technology (ICT) by transnational agrarian movements has contributed to unprecedented “movement building and collective action” (Borras 2009: 12). On the other hand, there is a need to analyse issues of property and control of data as well as the power relations between farmers and agribusinesses with these digital and technological developments (Carbonell 2016; Carolan 2018). It has been argued that there are growing dependencies of farmers on technicians and corporate industries for the peasants' means of production, i.e. seeds, finance, land, technology, have impacted the multi-dimensions of peasant farmers' autonomy and resilience (Borras 2009: 8-9; Van der Ploeg 2014: 1; Kloppenburg 2010).

Therefore, this is an opportunity to engage with peasant farmers on their practices, relations and understandings of technologies in their farming context.

1.3 Research objectives

- To engage in discussions with peasant farmers on their experiences, emotions and everyday practices related to peasant-driven technology
- To explore in which ways the peasant farmers' and AP's are co-constructing alternative farming imaginaries
- To critically analyse how reappropriation and sharing knowledges are reshaping peasant farmer's relations with technology, their farming practices and their farming environments
- To think and practice more caring ways of conducting academic research and critically reflect on the research-researched interactions

1.4 Research questions

Main question

In which ways are peasant farmers co-constructing alternative - or contesting the dominant - farming imaginaries with the peasant-driven technologies of L'Atelier Paysan in France?

Sub-questions

- What does “TS for peasants” mean and how is it practised?
- In which places and spaces are peasant farmers sharing and reappropriating knowledges and technologies?
- How are sharing and tinkering technologies reshaping – or not – peasant farmer's notions of access, property, the body and living with other-than-human beings?

1.5 Methodology, methods, ethics and positionality

For this RP, I chose to apply qualitative research methods drawing from feminist (Sörensson and Kalman 2017; Rose 1997; Da Costa et al. 2015), decolonial (Motta 2016; Sitrin 2016; Tuck and Yang 2014) and ethnographic approaches (Marcus 1995; Hammersley and Atkinson 2007). This body of work allowed me to highlight peasant farmer's multiples forms of knowledges, everyday practices and emotions with technology and his/her farming

environment. This RP is also an opportunity to (re)think practices and processes of conducting research in social studies.

For the research encounters, I employed in-depth interviews and participatory observation. As I had the opportunity to visit farms, I could observe the silent, but meaningful actions and interactions, the (in)coherence, or tensions with ideas and practices and “making sense” of the “mundane” and ordinary habits, tasks and interactions (Hammersley and Atkinson 2007: 3). Furthermore these visits and short farm stays built on applying Marcus' modes of construction of “following the thing” and “following the metaphor” (1995: 106-109). By following AP's peasant-driven technologies (the thing), I could simultaneously follow how the peasant farmer's alternative farming imaginaries were shaped (the metaphor). Following the peasant-driven technologies in different farms revealed how they were used and adapted in specific places and persons.

Moreover, I want to acknowledge and emphasise that the peasant farmers' knowledges are situated (Haraway 1988 in Rose 1997), embodied (Bartos 1997), relational and emotional (Motta 2016). That in the same farming environment, two peasant farmers, for instance, a farming couple, might experience, feel and know differently. This moves away from the tendency to “universalise” or “essentialise” the peasant farmer (Kloppenborg 1991: 252), and rather highlights how their “local knowledge” as characterised by Kloppenborg (1991) as

“the implication is that 'locality'—in the sense of inseparability from a particular place in the sense of embeddedness in a particular labour process—is the key distinguishing feature of this type of knowledge” (Kloppenborg 1991: 258).

To find participants, I first relied on my peasant farmer friends' network. They referred to me an organic peasant farmer acquaintance, Aude, who they knew had participated in AP's training workshop. My first exchange with Aude raised many concerns on my side about my “approachability” and “credibility” (Adu-Ampong 2019) as an outsider of the peasant farming networks in Brittany. I consequently started reflecting on my positionality and multiple selves I could hold, i.e. of not being from the land, speaking French with a different (Quebecker) accent, coming from a privileged, educated middle-class social environment, being a woman, having Filipino origins and not coming from a farming background. Living for the past four years in Brittany, I have been encountering on a regularly basis remarks, mostly tinted with curiosity, of being an “other” (Said 1978), as suggested by my body and my spoken words. This said, I remained aware that these layers and 'others', especially those I did not identify myself could contribute to create the dichotomy of the “knowing rational subject” (Motta 2016:35) and the observed subject.

The notion of “care” allowed me, thus, to be pay close attention to my interactions and the potentially asymmetrical power relations between research participants and myself. I understand that care in research ethics may “facilitate knowledge production” (Sörensson and Kalman 2017: 708), that is:

“care is often what makes knowledge possible, because in certain situations or circumstances, caring (for research subjects as much as about the outcome of research) may be a requirement for the production, validation and circulation of knowledge” (Cole 2015: 4 in Sörensson and Kalman 2017: 708).

Caring practices in this context involved giving enough time and space for peasant farmers to decide to receive me or not. It meant accepting any window of time they were available to engage with me. Indeed, the assigned period to meet the participants coincided with the harvest season, and so, hosting an outsider, although she may take part in the daily tasks, often required more time and energy. Caring practices also included asking participants their consent to publish their names, their preferred pronouns, how they wanted to be identified related to their farming activities and asking systematically permission to take photos. Finally,

a care approach also involved cutting short a discussion with a participant due to a toddler's persisting cries or urge to play.

My encounters with peasant farmers then became more than finding moments to meet the participants and 'collect data'. This process engaged me to be flexible with the participants' sometimes unpredictable schedules, but also to be attentive to their interests to engage in certain topics rather than others and to be grateful for their time shared during the harvest season. I adopt Da Costa's preference for the term "encounters" when talking about fieldwork where

"[...] it is not only about research but also about life. We meet people, we share ideas, emotions, knowledges. These can be positive and exciting moments, but there is also a lot of tension. Tensions that emerge when we meet people that are very different from us." (Da Costa et al. 2015: 270).

In finding participants, Hugo, an AP facilitator, Aude, a peasant farmer, and Odile, a dairy peasant farmer, played key roles as gatekeepers. The two latter shared contacts of potential participants for me. I noticed and stayed aware how their relations with their proposed contacts could also shape how my request would be received. For instance, I would become more "approachable" when I would explain that one of the gatekeepers had referred them to me.

I conducted informal, semi-structured and participant observation with 10 peasant farmers and attended two events with AP. During my short stays at the farm, I kept notes in a journal and recorded my thoughts at the end of the day noting my observations and the day's events. Recording seemed to be an easier way for me to debrief at the end of the day and less tiring considering the 'good days of work' spent outside. During short encounters with participants, I requested the possibility of recording my interviews with participants. This practice soon raised concerns in me for its potential "extractive posture" (Da Costa et al. 2015: 268). After the first recorded interviews, I gradually shifted to note-taking and recording my interview debriefs. I appreciated this approach, participants seemed more at ease with sharing stories and less concern on how they were formulated. All interviews recordings were then transcribed and coded.

1.6 Covid-19 circumstances

The spring of 2020 was marked with the spread of the Coronavirus across the globe. As a student, within days, our learning environment changed drastically. The online learning and physical distance brought many doubts and uncertainties in terms of carrying on with the research paper process. In June, the ISS Crisis Management Team and Deputy Rector of Educational Affairs (DREA) requested students who wanted to carry in-person fieldwork to submit individual proposals. After careful considerations and consulting my supervisor I submitted my proposal to conduct in-person fieldwork in France while applying all required sanitary precautions and measures (Appendix 1). As Covid-19 also changed many working environments, forcing some to stay at home and others to keep going to their working place, potentially putting their health at risk. As for agriculture, its seasonal tasks were not put on hold. With the closing of its borders, France, like other industrialised countries, found itself in shortage of its usual seasonal migrant labour (Chouin 2020). In the case of the peasant farmers I met, they were impacted by the closing of their weekly markets.

Chapter 2

The RP settings

In this chapter, I sketch the theoretical and conceptual elements informing my research. I start by presenting the notions of land imaginaries and farming futures, which frames the research objectives. Next, I bring into conversation three fields of studies, namely free/open source studies (F/OSS), science and technologies studies (STS) and feminist political ecology (FPE). Then, I provide contextual elements on the location of my encounters with peasant farmers and AP in the past months (Figure 2).

Figure 2
Farms stay in Brittany



source: author (2020)
(left to right, top to bottom)

Kerlou farm, tomato greenhouse tunnel (photo 1);
Kergréac'h farm, *butteuse* (bed rigder), to plough and incorporate green manure (photo 2);
Trezma farm, pig mobile shed (photo 3)

2.1 Conceptual and theoretical framework

Contesting dominant farming imaginaries and futures

To set the critical discussion around the authority, development and expansion of digital technologies in agriculture, two notions are introduced. Firstly, Sippel and Visser (forthcoming) suggest the notion of “land imaginaries”, drawn from anthropological and geographical studies, to explore current land transformations and issues raised in critical agrarian studies (forthcoming: 4). Following Li’s understandings of “land” (Li 2014 in Sippel Visser forthcoming), land imaginaries encompass the various and at times divergent societal

understandings, ontologies of land: “they can be hegemonic, silenced, or marginalised; appear naturalised or be the grain of contestation; they work as a means of oppression as well as liberation” (Sippel and Visser forthcoming: 4).

Land imaginaries are shaped in two entwined dimensions, of implicit and explicit components. On one hand, they are shaped by “language, norms, metaphors, and meanings” (ibid.) to express, describe and evoke what is designated as nature. These components may lead to a “naturalisation” of land imaginaries, and so influence, in the context of environmental issues, what is ethical/moral or not (ibid.). On the other hand, land imaginaries are “active visions and novel understandings of what land can or should do” (ibid.: 6). Indeed they are shaped by how people “actively work to influence and reshape human relations to land, together with the aim of realising a particular view of what land can do or afford in society”(ibid.).

Furthermore, land imaginaries link the temporal notions of present, past and futures, but particularly emphasise on the latter one. Carolan's article (2020) brings relevant understandings on the “futures-ness”, in the context of farming. To explore the envisioned futures of “industrial agrifood automation”, he unpacks “the fictional expectations underlied in capitalist reproduction” (Carolan 2020: 184-185). Following geographical and sociological studies, he explores “how some fictional expectations in farming are made real” (Carolan 2020: 185) and others, referring to Foucault (2003 in Carolan 2020: 185), are left to die. In the same way particular land imaginaries can become hegemonic or silenced. Hence, digital agriculture becomes a timely subject to analyse how expected future(s) become central, hegemonic and made real (ibid.) at the expense of others. Carolan emphasises that these farming futures characterised by digital technologies, should not be reduced to the objects. Instead, he proposes to “decenter things” and view them as *dispositif*, a Foucauldian concept, indicating a

“thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, [and] philosophical, moral and philanthropic propositions’ that enhance and maintain ways of life” (Foucault 1980:94 in Carolan 2020: 186).

The use of the concepts of land imaginaries, applied here somewhat more broadly as farming imaginaries, and farming futures, help to identify and discuss the various and divergent ontologies by farming actors, including farmers, private/public sectors, the civil society and the French State. Farming imaginaries are “various societal understandings” (Sippel and Visser forthcoming: 4) that are not only shaped across time and space but also by embodied, relational and situated knowledges (Kloppenborg 1991; Rose 1997). Within the farming population diverse and divergent farming imaginaries can be found. For instance, Jean-Pierre's story (Chapter 1, Section 1.2) reveals elements of his farming imaginary, particularly regarding the farmer's relationship with agricultural equipment. He conceives that farming technologies should be within one's spectrum of knowledges and skills to use, maintain and repair. The new tractor that broke down in the muddy field does not belong to the farming futures he conceives.

This said, it seems relevant to engage in further exploration and critical analysis of the individual and collective farming imaginaries and futures that emerge from the peasant-driven technologies of AP and the advocacy for technology sovereignty. It is not merely to look *what* peasant-driven technologies are co-innovated and advocated, but *how* are they enable co-constructing alternative farming imaginaries and (re)shaping peasant farmer subjects.

A conversation between F/OSS, STS and FPE

This research paper follows an interdisciplinary approach, bringing into conversation multiple fields of studies, to analyse localised farming experiences co-constituted by local and

global structures and mechanisms. This is an opportunity to interweave the fields of studies of F/OSS, STS and FPE together, as one theoretical field can shed light on the others' blind spot(s) or propose new reflection grounds.

Open source principles and communities

First, F/OSS provides an understanding on AP's discourse and online and in person activities for technology sharing and knowledges reappropriation by peasant farmers. Rooted in the field of computer science, this field of studies on free and open source movements is progressively being discussed in the agricultural sphere (Callahan and Darby 2014; Carolan 2018; Kloppenburg 2010). This technology development model is based on decentralised, bottom-up and “voluntarily” online collaboration (Hemetsberger and Reinhardt 2006:1), openness and sharing (Giotitsas 2019; Nicolosi and Ruivenkamp 2013). A study by Giotitsas (2019: 2) builds on F/OSS, to compare AP and its activities with a similar initiative in the United States of America (Farm Hack) and demonstrates how both can simultaneously form social movements and alternative development models.

Open source innovators, developers and users form creative and interactive communities and networks for free sharing of knowledge and information where the boundaries of time and space are blurred in the 'cyberspace' (Hemetsberger and Reinhardt 2006: 191). Open source artefacts, such as software and programmes, are released under licenses that secure free access, redistribution with possibilities of modification and improvement (Giotitsas 2019: 39). The Creative Commons License (CCL), which AP has adopted for all online publications, is an example of securing free access. Open-source movements can also encompass activities with hardware technologies or sociotechnical artefacts (Giotitsas 2019: 41; Nascimento and Pólvara 2018). This includes greater and more diversified collaborating spaces and actors. Social actors may be designated as makers, do-it yourselfers and hackers, engaging in online or physical temporary or permanent places, meetups, workshops and fairs (Nascimento and Pólvara 2018: 928).

It has been argued that such movements present potential for “community empowerment” (Nicolosi and Ruivenkamp 2013), considering they emerge from bottom-up and decentralised initiatives, convey participation, collaboration and sharing through “reskilling practices” (ibid.: 3). The latter notion describes a set of processes which “restores a part of the design and technical creation process into the hands of non-experts and, therefore, of the communities on which the technology unfolds its effects” (Nicolosi and Ruivenkamp 2013: 12). “Skill”, or know-how (*savoir-faire*) as used by AP, articulates the embodied knowledge emerging from the profound relationship between the body and the tool or the material (Chevalier and Chiva 1993). Know-hows are renewed continuously and are “the foundation of human sociability” (Sigaut 1994 in Nicolosi and Ruivenkamp 2013: 3). They are part of the diverse and connected forms of knowledges, along with the embodied, situated and relational ones (Bartos 2017; Kloppenburg 1991) and are central in demonstrating knowledge as co-produced socially and materially (Jansanoff 2004). Reskilling practices may trigger community empowerment, because of skill's groundings, in pleasure within sharing of experience (Nicolosi and Ruivenkamp 2013: 3). AP's online documentation and the training workshops may be characterised as support and spaces for reskilling practices, aimed at advancing individual and collective autonomy of peasant farmer communities. This RP intends to examine in which ways this aim is achieved (or not).

Moreover, there is a need to critically analyse who is part of the “community” and what are the “social, political and ethical conditions which may influence the actual access and use of knowledge, tools and technologies” (Nascimento and Pólvara 2018: 940). This requires questioning in which context technology users and innovators are engaging with reskilling practices and to what extent community empowerment, or technological sovereignty as

posited by AP, involves not only technology reappropriation, but also components of social justice (gender, class, age, able-ness, race, education). Further attention on these components of social justice is informed by my positionality and FPE and STS literature, to consider the various social dimensions and power relations involved in subject formation (Elmhirst 2015: 523).

Technology users, bodies, everyday practices and subjectivities

To add on, STS presents potential contribution to the becoming and composition of the 'community' of technology users. Scholars from this field move away from the determinist standpoint of technology found in some strands of studies in innovation studies and agricultural economics, by arguing that technology cannot be isolated from the social context of its design and use. They are "thoroughly enmeshed in society, as integral components of social order" (Jasanoff and Kim 2015: 2). Indeed, STS aims to advance insights in the "co-construction of user technology and technology" (Oudshoorn and Pinch 2003: 3) and to investigate how these co-constructions may encapsulate "tensions, conflicts, and disparities in power and resources among the different actors involved (ibid.: 16). Technology users are not fixed, homogeneous, passive recipients of technology and do not exist in isolation (Lindsay 2003). Feminist scholars from this field have proposed to conceptualise users as "active participants" (ibid.: 5) that are embodied in "many different shapes and sizes" (Cowan 1987 in Oudshoorn and Pinch 2003: 6). It is understood that users may present different bodies and ableness and their use or non-use of technology is embedded in a social context that may vary through place and time. An intersectional sensitivity as proposed by scholars from FPE provides analytical components in inquiring who are the technology users of AP and depicts the multiple, complex and intersecting layers of their subjectivities (Elmhirst 2015: 523). FPE scholars also invite to consider the person's body as a key site informing social contexts (Harcourt et al. 2015). Indeed it is argued that bodies are also sites of normalisation and resistance to social norms of gender and sexuality (Harcourt et al. 2015: 5):

"If we understand how gendered bodies are constructed in different discourses, we can challenge norms and oppressive practices, and understand how to exercise different forms of power that can transform and change oppressive conditions." (Harcourt et al. 2015: 5)

FPE scholarship has been exploring the dynamics of gender within struggles over access and control of natural resources, environmental degradation and the neoliberalisation of nature and the environment (Elmhirst 2018: 518). A FPE approach focuses on the operation of power relations on different scales, "in often invisible everyday spaces" (Clément et al. 2019: 5), which include the body. Having a focus on the technology user's body, in this case the peasant farmer's body, helps to unpack why certain bodies are perceived or designated a user and others not. The emphasis on the body recognizes a person's embodied knowledge and lived experiences. It also analyses the use of technology by certain bodies as acts of resistance or normalisation. Such analysis can contribute to further reflect on gender relations in the farming practice and agricultural equipment. Indeed, like in other conventional farming contexts in Europe or in "traditional" small-scale farming, technology in farming is still socially constructed as a masculine domain in France (Heggem 2014; Kasanga et al. 2019; Saugeres 2002). Saugeres (2002) demonstrates how men use and appropriate technology, namely the tractor which represents masculine identity and power over women and land (2002: 148). Agricultural technology then becomes a masculine space where men "reproduce and reinforce patriarchal ideologies which marginalise and exclude women from farming" (Saugeres 2002: 143). Yet, Saugeres argues that tractors may become a site for contestation and disruption of traditional gender norms and relations (Saugeres 2002: 151).

Moreover, the concept of subjectivity is relevant to explore in which ways reappropriation of knowledges and peasant-driven technologies are (re)shaping (or not) peasant farmer's relations and the boundaries of technology in their farming environment. Following feminist geographers, anthropologists, sociologists and philosophers, Nightingale (2013) refers to the concept of subject formation, by mobilising performativity, power relations and place, to analyse the links between individuals and collective practice in resource management. Subjectivities are unfixed, complex, ambivalent (Butler 1997 in Nightingale 2013: 2366) and at times in-coherent (Longurst 2003). Also, the boundaries between the subjects selves and their environment are distinguished by their everyday practices (Nightingale 2013: 2367). FPE scholars have focused on everyday practices, rather than discourses, in examining how subjectivities are subjected to, producing and reproducing power relations in particular places (Elmhirst 208: 524). A distinction of 'place' and 'space' appears here necessary. Both terms refer to locations and may comprise one in another. A 'place' in the context of this RP describes a specific physical location bounded to a "set of particular social interactions" (Massey 1999: 168). A 'space' has a broader and abstract spatial dimension. There might be multiple spaces in a place. A farm is understood as a 'place'; whereas the Internet remains a space. Peasant farmers can be thus be understood as embodied subjectivities "that are always placed, [...] [they] are performed within specific places and spaces" (ibid: 2367) and hold more than one relation with others (Elmhirst 2018: 523).

Access, tinkering and care

The concept of access in relation to peasant farmer's reappropriation of knowledge and skills, and to peasant-driven technologies should be discussed. On the one hand, access has been defined as "the ability to benefit from things – including material objects, persons, institutions, and symbols" (Ribot and Peluso 2003: 153). Ribot and Peluso (2003) prefer the term "ability", since it is not limited to social relations linked with property that enable or hinder people from benefiting from resources. This broader understanding of access underlines that one may have access to the benefits of a resource, while not having rights to them (ibid.: 154). Access is illustrated as a "bundle of powers" comprising the relations and processes to enable or dismiss the different actors to the benefits from resources: "some people and institutions control resource access while others must maintain their access *through* those who have control" (ibid.). It is also argued that access presents "grey zones" (Sikor and Lund 2009: 2). These are between the legal access (rights to) and actual access dimensions, and between power and authority: "Not all forms of power to decide who gets access to what resources and benefits, and on what terms, are legitimised with equal effect." (ibid.). Property and access are distinguished with the legitimisation process of a politico-legal authority, where legitimacy "travels back and forth" (ibid.: 3) between property and authority.

Further, Carolan (2018) notes that access is not always a positive process and there is a need for a more malleable conceptualisation than "access as ability". Indeed the ability approach to access silences the (in)capability or (im)possibility that people can sometimes experience in accessing resource benefits: "depending upon where one stands and the assumptions therein implied" (Carolan 2018: 746). While highlighting that access "imaginaries are deeply political" (Carolan 2018: 746), he looks at other ontologies of access. Following a capabilities-based approach to justice as proposed by Sen (1999 in Carolan 2018: 754). Carolan proposes collectivist ontologies that divert from neoliberal thinking and associate access as sovereignty. Access as sovereignty then translates access as a process and not just as a product (ibid.). These multiple understandings of access trigger exploration of how access is shaped and articulated by AP, peasant farmers and their use of peasant-driven technologies.

In investigating farmer's relations with materiality and how they are involved with farmer's engagement with technology, Higgins et al. (2017) unpack the notion of tinkering.

It is suggested that farmers come to tinker as a result of multiple constraints of access, mainly material, from commercial-technological and biophysical modes of ordering (Higgins et al. 2017: 194). These constraints drive farmers to find alternative strategies for their particular social and organisational arrangements (Higgins et al. 2017: 196). Therefore, tinkering is performed by farmers who “carefully” experiment, adapt, adjust and improve a technology to their farming environment, while simultaneously adapting the latter to their technology (Mol et al. 2010 in Higgins et al. 2017: 199). It is proposed that farmers’ tinkering practices are driven by “good care” for their farming unit, as a social and economic unit (Krzywoszynska 2016 in Higgins et al. 2017: 199).

Other dimensions, less directly related with the socioeconomic farming unit, may also be involved with farmers’ “good care”, such as food security and environmental management (Higgins et al. 2017: 199). The notion of “good care” or simply “care” by farmers can be expanded under FPE and STS scholars. Puig de la Bellacasa (2011) departs from the field of STS in inquiring how is “care” shaping our understandings of sociotechnical agencies, knowledge and things (2011: 86). She also remarks that care is used in various contexts and presents multiple and diverting understandings and ends: “Care is political, messy and dirty, not an innocent category, and even less so in technoscience” (Puig de la Bellacasa 2015: 17). She invites the exploration of everyday life practices of care and analysis on how they may nurture “alternative, liveable relationalities” (ibid.: 2) and decentre the “anthropocentric temporality in technoscience” (ibid.: 19) for other-than-human temporalities. Exploring care through peasant farmers’ use, design and tinkering of technologies may contribute to expand our reflections on their relations with others and other-than-human beings in their farming environments⁴ as well as the construction of alternative farming imaginaries.

This said, for the purpose of this RP, the three fields of studies and related concepts elaborated above present common grounds and complement in each other, by shedding light on one’s silences or deepening the analysis. On issues of access to resources, an FPE approach focuses on the gendered dynamics and operation of power, whereas F/OSS broadens the attributes of resources, i.e. as digital and shared simultaneously, in the cyber space. F/OSS also highlights practices of solidarity in none-physical spaces, of open access and sharing online, against ‘enclosure’ processes. The FPE literature on the other hand adds further dimensions in looking at the ‘community’ in open source networks and movements and technology ‘user’ and ‘designer’ in STS as non-heterogenous and complex subjectivities. In exploring a peasant farmer’s relationship with technology and knowledge, STS and FPE share understandings of co-construction and situatedness. The concept of ‘care’ as proposed by FPE scholars may propose further discussion on how peasant farmers come to tinker with technology and adopt certain technologies rather than others with focusing on emotions, relations and everyday practices.

2.2 Encounters with AP and peasant farmers

Farmers in France, a divided population^f

France's farming population, of an average age of 52 years old (Agreste 2019: 41) and where less than a third are women (2019), has been continuously declining. The number of farms has gone down, with an upward trend in the size of the average farm’s landholding. In 2016,

⁴ I follow feminist political ecology scholars who challenge the anthropocentric and binary thinking of the terms ‘environment’ and ‘society’ (Nightingale 2013). Here I understand ‘farming environment’ and ‘socioenvironment’, as places that are socially and ecologically shaped and entangled in complex relationships and processes.

the average landholding of a farm was 62 hectares, an increase of 7 hectares compared to 2010 (Agreste 2019: 18). The ongoing increase in the landholding's size may require more powerful and better performing equipment. This pattern has been observed over the last four decades. Indeed since 1979, the number of owned tractors with at least 55 horsepower has considerably increased. In 2013, they represented 82% of total owned tractors, whereas, in 1979, they were limited to 33% (ibid.: 26). This also translates current opposite tendencies with the small- and large-scale farms. In recent years, the number of large-scale farms has been increasing, unlike small-scale farms (Insee 2019). A small-scale farm is characterised by its standard gross production of fewer than 25,000 euros (ibid.). While they represent a third of all farming units, they only cover 7% of agricultural land and hold an average size of 14 hectares (ibid.). Small-scale farmers constitute a marginal part of the farming population and represent 12% of the total permanent (working yearly) farming population.

In the latest years, France's farming population has been going through a "deep socio-political division" (Van der Ploeg 2020: 668). On-going issues, pressures and "interconnected crises" (Edelman 2005: 336) have been greatly mediated and are contributing to the fragmentation and polarisation between farming and the non-farming populations. These current issues are related with agricultural policies, regulations and impacts on the environment and public's health, e.g. ecological and biodiversity degradation caused by industrial agriculture practices (Ogor 2017; Kronlund 2017); contentious use of pesticides (Gardette 2020) and land grabbing (Bruneau 2017; Franco and Borrás 2013) (appendix 1).

Encounters with AP and peasant farmers

My exchanges with AP started in May as my RP proposal was accepted. In June, I attended the first post-confinement activity which included prototype demonstrations and a set of conferences related to the "*Politique de la machine agricole*" (POLMA, politics of agricultural machine) research project.

Figure 3
Planting cabbages at the Kergréac'h farm



source: author (2020)

Engaging with peasant farmers in Brittany

Apart from attending AP's event in June, I remained in Brittany, the Western part of France, to conduct my research. In Brittany, agriculture is historically and still is an important sector. The region presents one of the highest land occupations by agricultural activities; nearly 62% of its surface is dedicated to them (Chambres d'agriculture de Bretagne 2019: 3). Agricultural modernisation of the mid-20th century converted the region, which was characterised of being rural and based on self-subsistence peasant farming, to specialisation and intensive farming models (Kronlund 2016; Ogor 2017). Brittany's primary farming production is currently livestock farming, including dairy, pork and poultry production (DRAAF Bretagne 2016). Small-scale farms and certified organic farming are still minorities in the farming landscape. Although the number of certified organic farms is increasing, approximately 14% of the region's farms are practising organic farming (Réseau GAB-FRAB 2020).

My short farm stays and meetings took place between July and August (Figure 3). Overall, I encountered ten peasant farmers, on six farms, with a diversity of farming settings and social backgrounds. Four farms had been created in the past five years and five were designated as “new agricultural installation” and “*bors-cadre familial*” (outside the family context). Also three farms had received the “*dotation Jeunes Agriculteurs*” (DJA, young farmer payment), a support grant for newly installed ‘young’ farmers by the French State and European Union (appendix 2). Almost all farms practiced organic vegetable farming (*culture maraîchère*). The smallest farm was less than a hectare, but the others were between 3 hectares and 6 hectares. One farm of 20 hectares sought to practice a farming system inspired by agroecology, mixing animal husbandry, cereal production, fruit orchard and vegetable gardening. On this farm, pluriactivity, bed and breakfast accommodation, helped them secure income and pay their farm mortgage (land and house). The biggest farm, of 72 hectares, was doing dairy farming (cows) and cereal production. All participants were ‘white’ European descendants, aged between early 20 and 60 years old and half were women. There were three (heterosexual) farming couples, of which one was transitioning into a “*Groupement Agricole d'Exploitation en Commun*” (GAEC, a collective farming unit). Four participants had one or two toddlers. One farmer was a salaried employee, and another worked alone but hired a seasonal worker. Two farmers had partners that salaried work in other domains than farming. Two farmers were retired (or in the process to retire) and one had decided during the spring that she would terminate her farming project at the end of the year, after five years of farming.

Most of the farmers attended AP's training workshops in their first years of farming. One attended hers during her (two) maternity leaves, viewing these periods as timely for training. The training workshops the farmers had attended or facilitated were mainly the ones: “*Initiation au travail du métal*” (introduction to metalwork), “*Formation à la mécanique agricole*” (training to agricultural mechanics) and “*Le tracteur: découverte, fonctionnement, entretien et réparations*” (The tractor: discovery, function, maintenance, fixing...) (L'Atelier Paysan n.d.d).

Two farms had followed training workshops on building tools and farming model based on the “*système de planches permanentes*” (SPP) (permanent soil bed system) for vegetable gardening. One farmer attended the training to construct a mobile pig shed. Only one farmer attended training workshops that used digital and electronic technologies. She followed the trainings to use the yearly crop planning computer program QROP² and to build an electronic automatic greenhouse tunnel door opener.

To my surprise, seven of them mentioned having completed university degrees (master degrees), related to agricultural agronomy, social economy and environmental studies. Having a similar education trajectory may have influenced the thickness of their answers, possibilities of further investigation on topics or meanings that were “implicit” and silences that this research might have. This commonality with participants also triggered curiosity on my

research methods. For instance, one participant asked me if on our next lunch, I would bring my “*grille d’analyse*” (questionnaire) to help me channel my questions with my research objectives. I reflected on that instance whether my questions were clear enough or not, or if my participant was expecting a more ‘formal’ setting for a ‘research project interview’.

Chapter 3

TS practices by AP and peasant farmers

In this chapter, I will be discussing practices of TS by AP and peasant farmers by focusing on everyday practices and emotions. This analytical lens provides broader understandings of TS involving knowledge-production, relations with the material and socio-biophysical environments, and the body.

3.1 A place for collaborative innovations

Figure 4
The Chtit-bine



source: author (2020)

At the end of June, I was invited by AP to join a two-day event at its headquarters including peasant-driven technology demonstrations, conferences covering the theme of politics of agricultural machinery and a general assembly. The salaried team, civil society and academic partners and peasant farmers were expected to attend this gathering. I was excited and uncertain about how AP's community would perceive my presence and RP. I also had never been in the Auvergne-Rhône-Alpes region before and was not familiar with the peasant farmer networks and farming context. And so, this event led me to unknown waters. The several hundreds of kilometres of travelling provided me enough time to reflect on how to introduce myself and what elements were at stake with my “approachability” and “credibility” (Adu-Ampong 2019). With a pencil, notebook and cell phone in my pockets and a face mask tied on my face, I dived into the collective's environment, which I had been studying for the past months.

The first day of activities took place at a member's organic vegetable farm with around 50 persons. Participants seem to be between 20 and late 50 years old and a bit more than a third of them were women. Located in a small valley surrounded by mountains, the host's

vegetable fields were ready for seedling transplantation or were already covered with young crops. Most tools and machines were addressed for vegetable growing and were used with a tractor. However, the Chtit-bine (Figure 4), a versatile structure for weeding and harvest, operated with an electric motor powered by solar panels or with pedals and a bicycle chain system. I had already seen some of the prototypes on AP's website, here were the latest versions of them. For instance, the Chtit-bine was initiated by a collective of peasant farmers in the North of France and has been continuously co-developed with AP since 2016 (L'Atelier Paysan n.d.b).

Seven demonstrators, who were all men, facilitated the activity. They were either salaried staff of AP, members of partnering organisation or peasant farmers. Each explained the context in which the tool was co-innovated, including the farming needs and tasks it would complete. Much information was also shared about the material required, the construction time, the approximate material cost, the contributions brought by AP (on the design and in knowledge), the current technical issues or improvements to be thought about and the environmental and ergonomics benefits. The demonstrators would sometimes highlight the decreased work drudgery or lower impact on the soil caused by the tool's lightweight or shallow tilling. They often concluded, to my surprise, with the current challenges and problems to solve and improve, rather than highlighting the benefits of the prototype. This promptly triggered discussions with the participants. Like a spontaneous and informal brainstorming of ideas and possible solutions. Some demonstrators also described the biophysical conditions of their farms which influenced the design of the tool. The Chtit'Bine, for example, is equipped with an electric motor strong enough to work on hilly terrain. The demonstrator mentioned to me when testing the limits of the machine; it had enough traction to start "climbing" a wall. All prototypes had tutorials and technical drawings published on the cooperative's website. Some were "collectively validated", i.e. the tool was validated by its use by peasant farmers, while others were still "work in progress".

This morning of peasant-driven technology demonstrations on a farm may be a concrete example of how AP practises 'TS for peasants'. Indeed, this event created a collaborative place where peasant farmers from diverse farming production and localities could exchange knowledge and experiences on farming tools and machinery co-developed in existing farming settings and needs. The format of the demonstrations followed sharing and participative approaches for knowledge production. The prototype demonstrations mobilized each participants' knowledges and field experiences to reflect on the development and improvement of the prototypes for future greater use. The lively discussions that followed the presentations blurred the demonstrator's role of 'expert' among the participants. The questions raised were openly addressed to the group, rather than to the demonstrator. The answers were collectively constructed and the suggestions for improving the prototypes were debated. The groups' interactions portrayed how participants could embody simultaneously and shift between the representations of technology "user" and "designer" (Oudshoorn and Pinch 2003: 3). Through this activity the "co-construction of user technology and technology" as elaborated by Oudshoorn and Pinch (ibid.) is apparent. The prototypes are designed and used within specific existing farming conditions and situated knowledges. In the same manner, their use contributes to shape and reassert peasant farming practices and models. For instance, the Chtit-bine is equipped with light machinery and with recycled materials (the bicycle chain and pedals). This translates the user/designer's possible limited access to (new) material and/or attention to reuse existing materials. It also reveals an attention for the biophysical environment, with less impacts on the soil, and design for small-scale farming. Hence this event illustrates how AP follows F/OSS principles of collaboration, sharing and decentralized technology development (Giotitsas 2019: 39; Hemetsberger and Reinhardt 2006: 1) in a physical space with hardware technologies.

Moreover, I noticed the spatial arrangement of the groups and its members. Most of them were hobbled around the tools, embodying a participative and more ‘horizontal’ space of knowing subjectivities. However, most participants were seemingly all-white European descendants and abled bodies. I also observed that very few women participants intervened. I took interest in exchanging with a several of them. Some were peasant farmers, others working with peasant farming unions and collectives, and from the academia. Yet which elements hindered their participation in the open discussions? Their quietness and the visible gender homogeneity of the demonstrators - only men- raised many thoughts in me about ‘openness’ and social inclusion in practice. It may be argued that this event of AP presented greater gender inclusion than in other open source movements and makers communities (Nascimento and Pólvara 2018: 940). Still, the demonstrators were in some way in power positions considering they had to present and facilitate the discussion with the groups. This ‘space’ they were occupying with their bodies and their particular power positions may contribute to maintaining to some extent everyday social constructions and gender dynamics in agriculture. It has been argued that technology in agriculture remains a masculine space (Saugeres 2002; Heggem 2014) and there are discrepancies between open source principles and practices. That is, “many of the maker communities [...] are more exclusive in practice than their vision portrays” (Ames et al. 2014 in Nascimento and Pólvara 2018: 940). And so, I started reflecting in which ways practices of TS was addressing greater social issues, such as gender and ability inclusion in technology. These reflections led me to inquire with the peasant farmers and their experiences in other AP spaces and places.

3.2 Overcoming fear and feeling autonomous

My farm visits and stays in Brittany allowed me to observe, and have exchanges about, practices that were related to TS with a focus on everyday practices and emotions. A FPE approach supports the attention for these two dimensions. It highlights that power operates in vertical and horizontal relations and through embodied and emotional connections (Clément et al. 2019: 4).

A common response by some peasant farmers was that they were drawn by AP’s training activities to “overcome fear”. Indeed, they had followed the training workshops on metalwork or tractor maintenance to resolve this challenge at the beginning of their farming activities. Fear emanated from their ignorance of knowing what to do in case of a breakdown; their perception of lacking required skills in farming; or a strong “repulsion” for tractor mechanics. During their training workshops, they were able to learn, practice and feel more at ease with these unfamiliar terrains. For instance, Gilles described being more confident with “*mettre les mains dans l’huile*” (getting his hands dirty) and asking neighbours for help and advice with tractor issues. Anne-Laure insisted that she was not at all attracted to tractor mechanics, but these were compulsory know-hows she had to learn for her farming practices. It seems that both participants did not feel “complete” or “legitimate” peasant farming subjectivities, since they could not perform these knowledges and know-hows, towards themselves and others, i.e. their neighbours. These feelings also reflect their farming imaginaries of peasant farming subjectivities. They reflect a knowledgeable and autonomous peasant farming subjectivity which should have full knowledge and ownership of their technologies from the beginning of their farming activities.

Kevin held a similar point of view of being a knowing subjectivity of his farming tools. It was “obvious” to him that he needed to be autonomous with his limited number of tools on his “big garden”. Indeed, he thought it was key to autonomy to know how to use, maintain, tinker and repair them. Due to his modest means, and uncertainty to project his gardening activities on the long term, he has been gradually equipping himself with technologies.

He characterized his gardening project as a “learning-by-doing” process. Kevin's understanding of autonomy with his tools illustrates (Higgins et al.'s 2017) notion of tinkering. His limited access to capital and land in the long term led him to “carefully” (Higgins et al. 2017: 199) choose and adjust his farming technologies. Indeed, he explained that his partner and him were currently living with one income and have been renting the house and garden where they have been living for the past three years. Kevin did not seem convince by the location, in terms of the neighbouring farmers. He described living surrounded by conventional farmers and being far from his peasant farming networks. Kevin's socioeconomic conditions partly inform his understandings of autonomy, which in some way follows AP's concept of TS, of having a “critical and responsible use” (L'Atelier Paysan n.d.) of agricultural machinery.

Aude explained that she approached AP because she was to a certain extent unsatisfied with her organic farming training programme (regional professional training). The farming models and technologies promoted during that training did not meet her farming imaginaries. She described that changing regularly planting areas required much tilling and ploughing “everywhere” and this constantly disturbed the soil. These practices “did not make sense” for her. It might be relevant to add that Aude started her farming project on a former conventional off-ground strawberry farm. When she began farming, she recounted that the soil under the greenhouse tunnels had been covered for a decade and was completely “dead”. This moved her. She did a soil inventory, and the first 30 cm was lifeless. It became a challenge to grow organic crops in such conditions. And so, she learned about AP's technologies for permanent soil bed systems (Figure 5). With the training workshops, Aude built a set of tools that “gently worked the soil” and seem to be more coherent with her farming imaginary of small-scale organic farming. Her expression of “gently working the soil” may be related with Puig de la Bellacasa's (2011) notion of “care” practice. Aude's use of technologies comprises here an ethical attention to lessen the impacts on the soil, of disturbance and depletion, and its inhabiting living beings. Her farming technologies enabled her to adopt a less “anthropocentric” farming environment, which considers sharing place with multispecies and in “more-than-human scales” (Puig de la Bellacasa 2015)⁵.

It may be relevant to add that the four participants above started their farming projects within the past 6 years and were not familiar with the farm's location and its socioenvironment before. They mentioned also not being from farming families. In France, such new farming installation are labeled as “*bors-cadre familial*” (outside the family context) and represent at least a third of the agricultural installation today (Barral and Pinaud 2017: 68). These elements of being ‘novice’ farmers and ‘newcomers’ on the farming land may have participated in shaping their feelings related with technology use and knowledges and will to take part in AP's training workshops.

⁵ Such “caring” practices which involve sharing space with other-than-human beings and nurturing biodiversity was also observed and discussed in two other farms.

This said, AP's activities become formal learning spaces where (new) peasant farmers can learn and develop knowledges and know-hows related to their farming technologies. These learning spaces convey processes of what Nicolosi and Ruivenkamp (2013) describe as “reskilling practices” (2013: 3) and individual empowerment. AP also seems to provide and foster alternative possibilities of organic peasant farming, which includes caring practices of working the soil.

Figure 5
Aude's farm



source: author (2020)

3.2 Having tools “that are practical”

When discussing about the use of farming technologies, most farmers explain the importance of everyone being able to use them. For instance, at the Trezma farm, this meant having tools that were adjustable for the person's height. At the Kerlou farm, this was articulated as having tools “that are practical”, as pointed out by Anaïs. The farm was launched by a couple three years ago and in the past months, it has transitioned into a GAEC (collective farming unit) with the arrival of an associate. In total, there were 4 peasant farmers, including 3 women, working at the farm during my stay. With the expansion of the farming team, Anaïs argued the tools must be accessible for everyone. That is, they must be “simple” and “practical” to use. There should be “no waste of time” with specific ways of using a tool that would limit its users. These criteria of the farm's technologies were apparent with the use of the hitch triangle (see Figure 6). During my stay, all tools used with the tractors were equipped with this linkage system. The Kerlou peasant farmers justified that it did not require much strength to hitch a tool to the tractor and enabled safer and quicker manoeuvring. A single person could hitch the “*semoir*” (seeder) or “*planteuse*” to the tractor easily. And so, it was common to see all peasant farmers using the tractors for various tasks. These scenes moved me as a non-farmer and feminist. Seeing a shared tractor used by people with different bodies and genders, suggested new dimensions of TS practices. Claire, the intern I mentioned in the Introduction, noticed that “it is rare to see so many women driving tractors”.

Claire's comment made me reflect on her farming imaginaries as a future farmer. Her enthusiasm of seeing “so many women driving tractors” informed her perceptions, or farming imaginaries, of the tractor's everyday user, which was not a feminine body. Prior to her internship at the Kerlou farm, it seemed that the tractor remained a symbol, a space

(McDowell 1999), of masculinity (Saugeres 2002). Here, the Kerlou peasant farmers were challenging these ‘traditional’ or gendered spaces and division of labour in farming. Anaïs shared that with the other peasant farmers, they were trying to deconstruct some social constructions of gendered practices in farming, such as with the use of technology and machinery⁶. She added that it was not that easy to detach themselves from all deeply rooted social norms and constructions. She mentioned for instance having preferences for the planning the tasks and doing the seedlings rather than doing tractor mechanics. Yet, the common use of the tractor translated an everyday practice of contesting persisting symbols of masculine power (Saugeres 2002) and suggested alternative farming imaginaries to Claire. The inclusive use of the tractor by different bodies, including mine, demonstrates in a way Harcourt et al.’s (2015: 5) notion of bodies as a site of resistance. Everyday practices related to TS at the Kerlou farm thus involved resisting and rethinking about persisting symbols of power and gendered practices in agriculture.

There is another dimension in the Kerlou farm’s use of technology that requires attention. As much as they advocate for a “simple” and “practical” use of technology, one should also notice Anaïs’ efficiency narrative, of “having no time to waste” and having tools which did not mobilize two persons for their preparation and use. This narrative was also present in the farm’s choice of new tools and task planning. For instance, François explained that he had calculated the amount of time spent on opening and closing the greenhouse tunnels’ doors. It required 140 hours per year, a month of salary, to simply roll-up and down the doors. To reduce the drudgery of work and costly time spent, Anaïs followed a training workshop with AP on an automatic door opener system. She learned how to build and set this automated system operating with an electric motor. The greenhouse tunnel’s temperature was regulated with three sensors, recording respectively wind orientation, wind strength and air temperature. This temperature control was more precise, according to Anaïs, and brought greater “*avantage sanitaire*” (sanitary benefits) for the seedlings against the cold and potential parasites. Anaïs and François highlighted the benefits with this self-built technology: the considerable cost savings, reduction of work and greater yields due to more precise temperature control. These components may be linked with productivity logic and forms of capitalist production (Mann and Dickinson 1978) and precision agriculture arguments (Bellon Maurel and Huyghe 2017) for technology adoption. Yet, the peasant farmers preferred learning and mounting the greenhouse automatic door opener system by themselves, which involved a considerable time to learn, built, test and adjust, and so of tinkering and tacit learning. They also insisted that this technology adoption was motivated by the desire to free more time for leisure and family, as three of the peasant farmers had young toddlers, and being more autonomous with its maintenance and repair. This to say, by analysing the Kerlou farm’s practices with technology through different lenses, it is less obvious, more complex, to grasp in which ways the peasant farmers are moving away from the conventional capitalist farming imaginary and reshaping alternative ones.

6 The topics of gender in farming and division of labour on the farm were raised with other farming couples and peasant farmers. With the farming couples, they explained being aware of gendered division of tasks and tried to share all tasks. Yet one peasant farmer described that the couple members had certain “specialties”, as they had “natural” affinities for certain tasks. With another farming couple, one of the farmers explained that he was doing the mechanics while his partner was responsible for the seeds and the market.

In conclusion, this chapter explored AP and peasant farmers' practices of TS. The analysis focused on everyday practices and emotions, following an FPE approach. AP's prototype demonstrations illustrated how the cooperative created spaces for knowledge sharing and production following F/OSS principles. This collaborative activity enacts a bottom-up and decentralised process of technology innovation and development. It involves a embodied learning and tinkering time, which moves away from the competitive rational of the technology treadmill (Levins and Cochrane 1996). Peasant farmers expressed TS through overtaking their fears and feeling autonomous through using, repairing, and tinkering with, their farming technologies and becoming a knowing peasant farming subjectivity, towards others and themselves. Still, the AP's prototype demonstration activity did not (fully) escape from common social constructions in agriculture, that is of technology as a masculine domain. On the other hand, the Kerlou farm's inclusive use of the tractor and other technologies remains an example of daily practices contesting 'traditional' masculine space and contributes to shaping alternative farming imaginaries.

Figure 6
Tractor with hitch triangle



source: author (2020)

Chapter 4

Sharing peasant-driven technologies and knowledges

In this chapter, I continue the discussion on how AP's activities and peasant-driven technologies may contribute to shaping alternative farming imaginaries by focusing on sharing narratives and practices. I will consider the dimensions of access and property to unpack the nature of sharing.

4.1 Creating spaces for sharing

As mentioned previously, AP has published numerous tutorials online and has identified more than a hundred peasant farmer's adaptations which are shared on its forum (<http://forum.latelierpaysan.org>). In this space, members can post, share and inquire on topics related to agricultural machinery and buildings, peasant farming techniques and events. When discussing with the peasant farmers about AP's online spaces, very few were aware of the forum and regular users of the cooperative's website.

AP's website and forum follow features of open-source online networks, knowledge and information free and open access and collaboration to whoever complies to the forum's guiding rules. These spaces widen AP's community, for instance, to those who are not in France or who cannot access to the training workshops with regional or national public funding⁷. As for the online documentation, AP argues to keep them under CCL, i.e. CC-BY-NC-SA license⁸, which allows anyone to "appropriate", "photocopy", "diffuse" and "modify" while attributing the creation to AP (L'Atelier Paysan n.d.). AP's adoption of CCL and efforts to maintain peasant knowledges and innovations relations to technology as 'open', suggest "access as ability" (Ribot and Peluso 2003). Any user of the Internet can access, download free AP's documentation, tutorials and technical drawing. Modification and build upon is possible if attributing credit to AP. This 'open access' to knowledges and peasant-driven technologies translate a political position of AP against "enclosure" and "intellectual property right regimes" (Hess and Ostrom 2007). AP posits that peasant knowledges should remain open, shared and adaptable since they are "*biens communs*" (common goods) (ibid.). AP's use of the terms 'common goods' loosely follow Hess and Ostrom's (2003) notion of "common good". The digital artefacts and knowledges are under an open-access regime, rather than a collective property, "where no one has the legal right to exclude anyone from using a resource" (Ciriacy-Wantrup and Bishop 1975 in Hess and Ostrom 2003: 121).

One sharing relationship lies between the initial technology innovators and AP. The former share their innovation at the expense of losing its exclusive property and use. Nonetheless, the initial technology innovators are recognized and mentioned on AP's website. By sharing their innovations, they accept its 'collective' open accessibility, potential improvement and adaptability. This follows Carolan's (2018) alternative understanding of access which involves a "capabilities approach to justice" (2018: 747). Carolan (2018) suggests that

⁷ Participants can fund their training workshops with national public fund organisation Vivéa (<https://www.vivea.fr/>) for agricultural professionals to access training programmes and certification.

⁸ The CC-BY-NC-SA license or Attribution-ShareAlike 3.0 license allows to share, copy, adapt and build upon materials while attributing credit, and in case of modification or build up the user must follow the same conditions as original's license (Creative Commons n.d.)

access may demonstrate a process, rather than a product, “where technology liberates and allows for experimentation as opposed to being a vehicle for monocultures of the mind, palate, farm, and produce aisle” (2018: 751). Sharing in AP’s cyberspace involves participating in building ‘common goods’, which are not subtractable and can be simultaneously used. The sharing relationships in this space are diffused, non-exclusive and involve the simultaneous use of the digital artefacts. The ‘common goods’ found on AP’s cyber community represent to some extent a contesting practice against the “intellectual land-grab” (Boyle 2003 in Hess and Ostrom 2003: 112) with the expanding development of digital technologies in agriculture and other spheres.

The dimension of “access as sovereignty” (Carolan 2018: 747) can be further demonstrated with AP’s training workshops. In these physical places, AP argues to conserve a “*accompagnement*” (support) posture towards peasant farmers in developing new knowledges and know-hows. The peasant farmers I encountered this summer described how these were also key places to meet other peasant farmers and build their farming networks. The training workshops indeed created spaces where peasant farmers from various types of production could discuss and exchange on their farming models. Gilles remarked that he was impressed to meet peasant farmers from other regions with different biophysical constraints and farming practices yet who wanted to construct the same peasant-driven technology as him. He was indeed thrilled to meet winegrowers with the same tools to build during the week-long workshop.

Also, Aude described how these spaces brought together peasant farmers with various farming practices and knowledges. The group had diverse skills’ levels and experiences with metalwork, mechanics and other craftwork techniques. According to her, this smoothens the potential power relations between the trainer and the participants. There was a lot of cooperation among participants, which were also knowing subjectivities with the trainer. Some peasant farmers highlighted that the format of these activities favoured collaboration, by collectively building the tools. AP describes this approach as the “*pédagogie du chantier*” (construction site’s pedagogy), where all planned tools are collectively constructed during the workshops, allowing participants to practice the techniques multiple times on each tool to build. This approach follows F/OSS principles of bottom-up and collaborative technology development. In this case it is with physical artefacts and within a closed group. Yet within the period of the workshops, property of the constructed tools becomes a collective manner.

AP’s training workshops take place in agricultural learning institutions, where the cooperative rents the spaces, but also in farms. Peasant farmers can propose to host a workshop residence on their farm. This format may allow host peasant farmers to build new solidarities and networks. The Trezma farming couple described that they had host a metalwork training workshop a few years ago. Hosting a training workshop represented sharing their space with other surrounding peasant farmers in a learning context. It also demonstrates how peasant farmers are also initiators of creating these learning spaces and building solidarity networks.

In this section, sharing has been sketched in different spaces and places. The sharing relationships are at time dyadic, multiple and diffused among technology users and designers. They may be between a technology innovator and AP for new peasant-driven innovation dissemination. It may also involve AP’s website users accessing the online publications and exchanging in the forum space. In the cyberspace, sharing is spaceless, open and more flexible in time. In other places such as the training workshops, knowledges and skills are shared between the trainer and participants, but also among the participants themselves. For some participants, these were key spaces to build their peasant farming networks as they were novice farmers. So far, in these spaces, non-subtractable goods, i.e. knowledges, ideas and techniques on technologies, are shared. These implications of knowledge co-production and sharing demonstrate AP’s collective and solidarity vision of technology sovereignty.

Nonetheless it appears relevant to question who is taking part in these sharing spaces. An inquiry of the online forum community was not completed⁹, but the peasant farmers I encountered provided overviews of the participants during their training workshops experiences. All reckoned that there were mostly newly installed ‘young’ peasant farmers (appendix 3), mainly in the organic farming sector and not so many women. They reckoned that less than a third of the group, usually of 12 participants, were women. For two peasant farmers, this was rather representative with the farming social context in France. In the past decades, women have been progressively increasing in ‘visibility’ (Annes and Wright 2017). Currently less than a third of the farming population are women (Insee 2019) and almost half of the agricultural education institution student body are women (Fadear 2020: 4). Another peasant farmer was concerned on how AP could promote greater gender inclusion and not reproduce and maintain gendered spaces in agriculture. She commented that it was important that women should also be visible among the training and technical team of AP. As of now, the cooperative is composed of 22 salary members including 4 women. Among the technical specialist and training staff, none are women. This was problematic for the peasant farmer. It contributed in some way to reinforce gendered professions and spaces in farming. This invisibility of gender diversity is a recent concern raised among the cooperative. A project coordinator explained to me that its members are currently reflecting on more gender inclusive approaches and creating greater support for women peasant farmers.

4.2 Locality of technologies

The (im)possibilities of material sharing was explored in critically analysing ‘sharing’ as narrated and practised by AP and the peasant farmers. The latter had diverse responses and some were silent when asked if they shared their farming technologies and with whom.

Aude pondered a while when I asked if she shared her tools with the farming neighbours in Loperhet. She explained that it was difficult to move her tools out of the farm, since she did not have the proper transportation equipment and her farming acquaintances lived too far away. More importantly, she argued that her tools for permanent soil beds had specific dimensions, of 1.5 meters wide. Consequently they were not compatible with other farming models of neighbouring farmers. The only neighbouring farmer I was aware of during my stay was a dairy farmer. She was not particularly familiar with him or appreciating his farming practices. She characterised their relationship as a ‘pacific cohabitation’. She explained that her short encounters with him in the past years did not incite her to create a close relationship or ask for advice or borrowing tools. And so, she maintains a distant relationship with him. For instance, she initially believed that he held the same political views as her, which was not the case, and that they went through the same ‘social problems’, considering both were farmers. It may be discussed that the tools’ customized aspects impede sharing with others, but different farming models, political views and relation with agricultural material and equipment as well. On the latter, she explained that there are different “modes of ordering” (Higgins et al. 2017), of spatial and social arrangements with technologies among farmers. Some farmers invest, adopt and renew rapidly with their farming technologies, and are ‘well-equipped’. Whereas others, with more limited capital or not, come to tinker, repair and borrow tools. And so, Aude’s possibilities of sharing with her neighbouring dairy farmer may be limited by his farming production (of conventional dairy farming versus alternative crop

⁹ This RP did not conduct such in-dept inquiry. A quick overview revealed the on-going exchanges and activity on the forum. Considering the forum users do not need to disclose their identity and may use pseudonyms, it became difficult to analyse who took part in this space without conducting a survey.

farming) and divergent relations with technologies. Nonetheless, she explained that her practices of sharing mainly involved farming knowledges and know-hows. These exchanges and shared advices were key during the first years of her farm and were with peasant farmers met during her training workshops at AP.

In other respects, a few peasant farmers informed that AP lent prototypes for one year to newly installed farmers. On their second farming season, the Kerlou farmers borrowed 3 prototypes, namely the Bedridger, the Vibra bed-former and the Culti-ridge, to set their permanent soil bed system. This one-year lending allowed them to make a “clear” decision on which tools were relevant for their farm. François constructed two of them himself the following year with AP’s training workshops. Like Aude, the Kerlou peasant farmers were not quite expressive about sharing their farming technologies with neighbouring peasant farmers. They held similar arguments, of not having proper transportation equipment and different farming practices as compared to their direct neighbours. The closest peasant farming friends lived 10 kilometres away and their tractor was not strong enough to bring other tools and equipment. Yet, Anaïs explained that they shared their weekly market space, on the farm, with other food producers. François mentioned that one of the main factors that impede sharing tools with other farmers and even within the Kerlou farm is the “*référence d’usages*” (use references) of each individual. This illustrates the different perceptions of how a tool is properly used and what are its limits. He suggested that to avoid any ‘awkward’ moments, of breaking a tool or wearing it out, the users must identify what collective or personal use is appropriate. Sharing here becomes more complicated with farm-level property and feelings of private ownership. With the presented examples, sharing practices involved mainly digital artefacts and AP’s ‘common goods’.

The boundaries of sharing at the Kerlou farm moreover involved non-material resources, namely data. Indeed, the Kerlou farm members seem quite concerned about non-authorized access to, and use of, their information and the farm through Internet. They explained that they used an open-source operating system with their computers (Linux) and sought for other open-source based technologies. They had for instance found an electronic scale for the market compatible with Linux. It was imperative for them that they kept full control of their data, for instance their market sales. This assured them to remain “independent”. I saw their concern about sharing data when I asked if I could take photos of the tractors and tools with my cell phone. They allowed me to do so as long as I did not share them on social medias and kept them for research purposes. The topic of data privacy and security was not discussed with the other peasant farmers yet could have been further explored. Wolfert et al. (2017) have identified this topic as widely expressed by farmers with the development of ‘smart farming’.

In conclusion, this chapter has addressed the multiple implications of sharing within AP’s spaces and regarding the peasant farmers’ use of technologies. Sharing has different boundaries and relationships depending on when it concerns physical or digital artefacts. On the one hand, sharing on AP’s webpage and online forum involves an open, undifferentiated, multiple and simultaneous use of digital “common goods” (Hess and Ostrom 2007). AP’s members are also willing to share personal information, such as the location of their farm and peasant-driven technologies they are using within AP’s website and forum. Sharing such information help to shape a peasant community and network beyond a peasant farmer’s physical socioenvironment.

Yet some peasant farmers were reluctant in sharing more information in other online spaces, such as social media. They were indeed concerned with the distribution and unknown use of their data. On the other hand, sharing in physical places and with in-person interactions is quite present with AP’s training workshops. Participants in these places are enthusiast to exchange knowledges and experiences with each other, and to create local peasant farming

networks. One identified common limit of sharing seems to be with material peasant-driven technologies. The peasant farmers justified that the locality of their tools, individual embodied and situated knowledges on technology use, the different farming systems of their neighbours and so farming imaginaries impeded the opportunities of sharing. These limited practices of sharing physical technologies shed light on the farming landscape in France, where peasant/small-scale farming remains marginal and to some extent isolated.

Chapter 5

Rethinking technology's boundaries and spaces

In this chapter, I will explore how AP and peasant farmers are tinkering technologies and how this leads them to critically rethink technology's boundaries and possibilities to share space with other-than-human beings and care for diversity in shape and size. I mobilize the concepts of relations with other-than-human beings, futurity and care from science and technology and FPE studies.

5.1 Tinkering technologies

My encounters with the peasant farmers in Brittany encompassed conversations around tinkering technologies. Six of them shared anecdotes related to this topic with much enthusiasm. Some showed tools they had created or repaired. They described how they had come to think, build, test, adjust and repair their farming tools, either on their farms, with AP and other collectives. These moments of tinkering farming technologies emanated from constraints, of limited access to capital to invest in new technologies or material. This relates with Higgins et al. (2017) description of tinkering, as an alternative form of ordering. Many of the peasant farmers owned secondhand technologies. Indeed, all the farms I visited had secondhand tractors. Moreover, two other peasant farmers demonstrated proudly tools they had created with recycled materials from the farm. Gilles particularly highlighted how his tinkered hoe was adjustable for his partner's and his heights. Tinkering technologies also took also place in other conditions. In the case of Aude, tinkering involved collective technology development.

Aude recounted her experience with AP's Buzuk project. This three-year project, from 2014 to 2017, brought together seven peasant farmers/gardeners and AP's technical facilitator of Brittany to research, co-develop and test technologies that could "work less" the soil and foster "*des sols vivants*" (living soils). The project was initiated from a collective observation that diversified vegetable gardening, whether organic or not, comprises intensive practices which have negative impacts on the soil (Bratzlowsky 2015). The objectives were to co-innovate technologies and peasant farming models, following the permanent soil beds systems and "*couvert végétal*" (cover crops), that would improve the soil's fertility and conditions. Aude explained that these farming techniques were partly inspired by cereal production techniques, including in conventional farming and conservation agriculture (Corsi and Muminjanov 2019). Layering cover crops improves the soil's conditions with the amendment of organic matter and leaves it to rest by reducing weeding processes. A few prototypes emerged from this project, such as the Rolo FACA and the Strip-till, and were collectively constructed and tested with the participating peasant farmers. Both of these tools are used with a tractor. The Rolo FACA is used to 'lay down' the cover crops and cut their stems. The Strip-till is used to create a sowing line on the cover crops. Aude remarked that the field tests at the participants' farms presented different results and many challenges. The problems lied with the farming techniques rather than the tools. She explained that 'layering a plant cover' on permanent soil beds was not so adequate for vegetable gardening. There was significant difference of growth between crops sowed in a mechanically tilled soil bed and in a cover crops bed. She used the example of a lettuce seed. The latter is quite fragile compared to a cereal seed, e.g. maize seed, and more vulnerable to moulds and moisture. Hence growing in a green

layer inhabit with bacteria, mushrooms, humidity, and other living beings becomes a challenge for the lettuce seed.

Aude's story with the Buzuk project reveals other learning spaces of AP and peasant farmers, where they are collectively rethinking, developing and testing agricultural technology. This project aimed to develop technologies and practices by following existing techniques in cereal production, which aimed to reduce or minimize mechanical soil disturbance (Corsi and Muminjanov 2019: 4). Like in other examples mentioned previously, peasant farmers in this technology research and co-development project played simultaneously the designer, user and mediator roles (Oudshoorn and Pinch 2003). With the field tests on their farms, peasant farmers identified the benefits, flaws and challenges with the use of the co-innovated technologies (Strip-till and Rolo FACA). Aude explained that the technique of cover crops was not adequate for growing vegetable crops, based on the collective experiences, farm localities and knowledge production. It was difficult for her to adopt the cover crops in her farm considering the Breton climate, of great humidity, cold and rainy weather. And so, this project demonstrates how technology users are "active participants" (Lindsay 2003) and that technology and its users are co-constructed (Oudshoorn and Pinch 2003) and equally constrained by the socioenvironmental conditions in where they emerge.

Moreover, the notions of modernity and 'pace' of productivity may be contested in some manner with the Buzuk project. The name Buzuk, or earthworm, seems uncommon for a technology innovation project in agriculture, particularly in the context of digital technology's expansion and smart farming development (Carolan 2018; 2020). It counters in some way the "futured-ness" (Carolan 2020) and the lexicon of 'bots' and 'automation' of technology with its reference to an omnipresent, often forgotten and essential to the soil's structure living being. Aude explained that the project was named as such since the project aimed to foster living soils with other-than human beings, i.e. with earthworms. The purpose of working less the soil mechanically would allow to create time and space for earthworms to drain, decompose and structure the soil. They would be doing the same tasks as the mechanical tools, but in a different temporality. One could also notice the use of a word from a minority language in France, from a region with an agricultural history as regarded as "backward" (Ogor 2017). The use of "*Brezhoneg*" (Breton) may participate in the project's contesting aspects.

Also, it may be discussed that the project's objective of 'working less' the soil to improve its conditions contradicts the 'pace' of productivity. On the one hand, it may be discussed that the project follows principles of agro-ecology and "conservation agriculture" (Corsi and Muminjanov 2019: 4), which are already widely adopted with conventional farming and by the French state (Ministère de l'Agriculture et de l'Alimentation 2016), and so the practices and techniques are not as such 'alternatives'. On the other hand, the principle of 'working less' the soil may evoke notions of giving time, putting to rest and reducing mechanical disturbance, which resonate as contrary to the pace and direction of progress. Particularly in a context of urgency to act with climate change. Puig de la Bellacasa (2015) argues the persistence of technoscientific futurity of a

"temporal frame of an epoch still marked by a linear imperative of progress versus fears of regression; the time embedded in practices paced to a productivist ethos; and the experienced, embodied time of restless futurity." (Puig de la Bellacasa 2015: 3).

Hence the Buzuk project articulates bottom-up and collaborative practices of technology tinkering. This learning experience and process demonstrates a collective approach to technology development which may suggest contesting positions towards logics of modernity and productivity.

5.2 Blurring technology's boundaries and sharing spaces

Furthermore, my short farm stays allowed to observe and discuss under which conditions, constraints and ethics did the peasant farmers come to tinker their farming technologies.

Figure 7
Potato harvest with the potato harvester



source: author (2020)

For instance, the Kerlou's peasant farmers raised other understandings of technology's boundaries. Our discussion about the farm's organisation and practices highlighted the centrality of ergonomics. Anaïs and François informed me that they reflected and conceived their practices, e.g. transplantation, harvest, weeding and market preparation, based on limiting work drudgery, optimizing effectiveness with the biophysical and social conditions of the farm. This meant having tasks which could be completed by any (abled) body and limited physical injuries. Anne-Laure, their associate, made me notice the common use of wheelbarrows: "haven't you notice that we rarely lift and carry things here?". She explained that human bodies were tools too and it was key to think about practices that would maintain them healthy and "not-worn out" in 20 years. The Kerlou farm's concern, and so care, for the sustainability of working human bodies is illustrated in the photo above, taken during the potato harvest. Once the potato harvester (Figure 7), a machine used with the tractor, passed through the soil beds and lifted the potatoes from the ground, we collected them with plastic baskets. We worked in seated positions, in pairs face-to-face, gathering the potatoes at an arm length. Once all the potatoes were collected in the baskets, they were piled up on a pallet with the tractor. Anaïs and François explained that these harvesting steps reduced the passing of heavy machinery on the soil and avoided carrying heavy potato bags in the 50 meters long soil beds. What was not mentioned, but evident, was that this harvesting practice was a socializing practice. During this harvest, we worked in pairs and all six persons on the same

row. Although repetitive, this task allowed in-dept discussion on diverse topics as well as a close and embodied experience with the harvest. Collecting manually each potato gave time and space to touch and carefully notice the diversity in shape and size. It also revealed how the potatoes were not only food for human beings. Some tubers were already a feast for other living beings such as rodents, insects and mushrooms. A compromise of organic farming or sharing space with other-than-human beings?

This question was not explicitly asked to the Kerlou farm, nor to other peasant farmers. It emerged through dispersed conversations. With deeper analysis, it seems to enclose a tension within the peasant farmers' farming practices. This was visible in three farms. The peasant farmers would highlight the presence of insects, amphibians, birds and other plants on their farms. Yet they remained concerned by potential crop predators. To avoid the latter, plastic sheets were placed on soil beds to protect the seedling from flies in two farms. Electric fences were installed against deer in one farm, who had experienced a considerable loss of strawberry and lettuce crops in the spring. It remains unclear to what extent the peasant farmers shared parts of their cultures. While all the materials used to protect their crops, of plastic sheets and black tarps, two peasant farmers raised self-criticism of their 'organic' 'small-scale' farming. They seemed concerned on how 'alternative' and coherent their practices and techniques were with their ethics and organic farming imaginaries. A few times, they compared them with conventional farming. And so, the question remains unanswered, but rather translates a tension between the peasant farmers making compromises (of accepting crop loss) with organic farming and sharing their spaces with other-than-human beings.

In other respects, technology's boundaries at the Kerlou's farm were further expanded during an incident with François. One afternoon, as I was pruning the tomato suckers, little shoots growing off a branch, in the tomato greenhouse tunnel, François came in a rush towards me. He had a smile of satisfaction and was holding something at the tip of his fingers. He called out to me that "I needed a cat the day I would have a farm, it would be the best harvest guardian". As he said this, he showed to me a dead mutilated rat. Considering our conversations about the farm's organisation and practices in the past two days, it seemed clear to me that François was including his cat in the farm's technologies. These observations demonstrating how the Kerlou peasant farmers included human and animal bodies as working tools, led further reflections on other implications, as of affective, temporal and caring, of technology. This ambiguity of technology, including living and non-living forms, lead to pay attention to the sustainability of a technology, in order to prolong its effective use. At the same time, its limits in use and life cycle were recognized. Relations with farming technologies were not limited to work, but more diverse and complex. Blurring technology's boundaries also lead to consider variety in shape and size, and its co-construction in particular place and time.

Hence, these understandings of technology participate in how the peasant farmers come to tinker. With their "particular social and organisational arrangements" (Higgins et al. 2017: 196) and biophysical conditions of the farm, they adapt, adjust and improve their technologies and practices. Another perspective would forward the "ethico-political concern" (Puig de la Bellacasa 2011) and practice of care. Puig de la Bellacasa (2011) posits caring as a practice and commitment

"that affects the way we produce knowledge about things. [...] Here care stands for a signifier of necessary yet mostly dismissed labours of everyday maintenance of life, an ethico-political commitment to neglected things, and the affective remaking of relationships with our objects. (Puig de la Bellacasa 2011: 100).

Through this perspective, the Kerlou farm's practices with technologies may be understood in 'caring' ways. The potato harvest and the inclusion of living beings as farming tools are practices and meanings that blur the boundaries of technology. Its ends of productivity and efficiency are decentred by caring attention for its sustainability, maintenance and affective relations. Furtheron, 'caring' practices comprise sharing space with other-than human beings. The little use of the tractor and absence of pesticides for the potato culture inform the Kerlou's farm attention of sharing space, the soil, with other-than-human beings, of a "everyday experiences of interspecies intimacy" (on Haraway in Puig de la Bellacasa 2011: 98) (Figure 8).

Figure 8
Potato harvest, collecting the tubers



source: author (2020)

As mentioned previously, the Covid-19 pandemic changed many ways of living and also impacted the peasant farmers' socioenvironments. For instance, Aude described how the spring lockdown changed the sales of her crops. Considering the sanitary measures and restrictions, the local producers store, Goasven, where she sold part of her vegetables, proposed to create an online application to replace their weekly market. This place was dematerialized into a cyberspace and allowed local farmers, such as Aude, to keep selling their products. Aude argued that the online space helped the producers to maintain their revenues and attracted new clients. However, once the lockdown measures were relaxed, the coordinating team and involved producers decided not to keep the online application. Aude explained that this was a delicate situation. Preparing the ordered baskets required much logistics, energy and time. This task was mainly completed by volunteers. Also she felt that the online basket system was engaging her products in a 'standardisation' and 'homogenisation' process. The written list of products with fixed weight per order and no photos narrowed and simplified the possibilities of purchase. This hindered the diversity of shape and size of the fruits and vegetables and "little odds of nature" as Aude said. Furthermore, she was annoyed with immense waste of plastic, considering they had to wrap everything, and the loss of social interaction with consumers.

Aude's story of the Goasven's temporary online market illustrates possible tensions with technology use in different spaces. On the one hand, the digitalisation of the market supported local farmers during the lockdown and had a greater reach with consumers. On the

other hand, this online space standardised the products and withdraw the social and embodied experiences between food producers and consumers. Goasven's collective choice to terminate the online market demonstrates how some technologies do not participate in shaping alternative farming imaginaries. The digital space seemed to be contrary to the ethico-political positions of the collective, of advocating for close food circuits and community spaces. Aude's concern reveals caring for diversity of products, with its sometimes-unpredictable results, in shape in size, and embodied social interactions with the consumers of her products.

In conclusion, I explored here how AP and peasant farmers are collectively and individually tinkering technologies and how this participates in shaping their farming imaginaries. AP's Buzuk project was discussed in how it demonstrates bottom-up and collaborative approaches to technology innovation and knowledge co-production and contests in certain ways the notion of 'futuraity'. This brought further exploration on the peasant farmers' tinkering of technologies involving practices of care for human bodies and other-than-human beings. A tension was identified with peasant farmers sharing their farming socioenvironment with other-than-human beings. Some farmers were critical on their coherence between their practices and farming imaginaries. Moreover, tinkering with 'care' comprises recognition of the variety in shape and size, limits in use of technology and "more-than-human interdependent temporalities" (Puig de la Bellacasa 2015: 1).

Conclusion

To conclude, in this RP I explored in which ways AP and peasant farmers were (re)thinking and shaping alternatives farming imaginaries through their practices of reappropriating, sharing and tinkering technology in France. The cooperative characterises its practices for technology co-innovation and reappropriation as decentralised, bottom-up and collaborative. Such practices articulate an opposition to on-going ‘enclosure processes, and intellectual property regime in agriculture. Its advocacy joins collective farming initiatives and peasant networks on reappropriating (local) knowledges and promoting diverse situated farming models.

I attempted to bring into conversation the fields of F/OSS, STS and FPE studies, following an interdisciplinary approach, to analyse how peasant farmers use and understand technology in their farming environments and in other spaces, and in which ways AP articulates TS. Mobilising these three fields of studies shed light on AP’s spaces for collaboration, sharing and tinkering, which were at times on the Internet, in physical learning training workshops and on peasant farmers’ farm, and how peasant farmers may navigate between an online to physical farming communities. This conversation between three fields of studies allowed to analyse how access, everyday practices, situated and embodied knowledges, co-construction of technology and users, ‘care’ practices for human bodies and more-than-human beings are interconnected and constantly shaping peasant farmer’s understandings and relationships with technology and their farming environment.

AP’s advocacy for TS through its activities and spaces demonstrates how peasant knowledges should remain ‘common goods’ and so accessible, collaborative, situated and in continuous improvement. TS translates an individual and collective empowerment of technology innovation, use and tinkering, and feelings of overcoming fear and autonomy. It also proposes venues of critical thinking on technology and the ‘modern productivity’ rational. Peasant farmers use and tinker technologies to adapt them to their farming practices with multiple socio-biophysical and material constraints. In some farms, particular attention was raised by considering the variety of shape and size of the users’ bodies and sharing the farming environment with other-than-human beings.

Sharing emerged as a central concept throughout this RP. It is practised in multiple spaces, with various relationships and ‘things’. Practices of sharing involve digital artefacts and knowledges, through voluntarily collaborative relationships among users and designers in the cyberspace. Within AP’s website and forum, access to these ‘commons goods’ is suggested as a process conveying “collective ontologies” (Carolan 2018), for open and extended peasant communities and networks. Sharing also is demonstrated in AP’s learning physical places of training workshops, technology development projects and prototype demonstrations. In these places, the position of technology ‘expert’ or knowing subjectivity was diffused and shifting among participants. These places also foster new peasant farming solidarities. Situated and embodied knowledges are shared and participate in producing new collaborative knowledges, as participants are simultaneously technology ‘designers’ and ‘users’.

Nevertheless, sharing seems more complicated when it involves physical ‘artefacts’ with the peasant farmers. The customised aspects and specificity for certain farming techniques and models of the peasant farmer’s tinkered technologies seem to impede sharing with neighbouring farmers. Sharing, of intellectual and physical materials, is also halted by divergent political views and farming imaginaries associated with farmer’s type of production. Moreover, a tension was identified with peasant farmers in sharing their farming environment with

other-than-human beings. This raised self-criticism for some peasant farmers on the coherence between their practices and farming imaginaries of small-scale organic farming.

My encounters with peasant farmers and AP also revealed more significant socio-political tensions in the farming population in France and technology development in agriculture. The peasant farmers fell silent on sharing technologies with neighbouring farmers with different farming imaginaries. This illustrates in some manner how opposing farming imaginaries may be maintained and reproduced. To some extent, these limited sharing practices by peasant farmers within AP's community and network depicts the "deep socio-political division" (Van der Ploeg 2020: 668) and on-going polarisation of the farming communities in a context of multi-faceted crises related to pressures by agricultural policies, global markets, public's health and environmental norms and climate change. Another tension emerged with peasant farmers sharing personal information 'openly' in the cyberspace. This concern about data privacy and control emerged in one farm but was not further explored with other participants despite the relevance of this topic. Further study could have been undertaken, which would have provided insights on how peasant farmers order with digital technologies.

Another silence, or unexplored venue, which may require further attention is AP's community and networks from a social justice perspective. AP's advocacy for TS by peasant farmers, informs individual and collective empowerment, yet it is uncertain who is included in this community empowerment and to which scale. The cooperative has demonstrated concern and awareness of greater gender inclusion. Still, it was observed and shared by peasant farmers that some AP's spaces reproduce and maintain in some manner gendered symbols in agriculture. Moreover, all the peasant farmers I encountered were white, European descendants, and issues race, of racialised division of labour in agriculture were left silent. Considering AP receives considerable funding from the public state to support its activities, more inquiry could be lead on its transformative capacity and political lever in agricultural policies and in social justice in agriculture.

In other respects, this RP intends to reflect on more caring practices in conducting research. I want to recount on Aude's words during our first encounter in the spring where she repeated multiple times "I have time, I am not in a hurry you know", to reassure me that I was not taking too much of her working time. Her words demonstrated openness and genuine availability, but also care of sharing on her farming practices and understandings of food justice. This attention grounded me in being conscious of the delicate situation in which I was conducting in-person research, during harvest season and Covid19 circumstances. It encouraged me to listen, share space and time and nurture relationships with the peasant farmers, beyond an academic context.

This RP shed light on the multiple ways of (re)imagining farming, food production and peasant communities through sharing and tinkering technologies. Throughout this learning process, what remains is a common passion and commitment for creative, continuous and collective learning within a living environment that comes in different shape and size.

Appendices

Appendix 1 Safety protocol

Monday, June 22 2020

ISS Crisis Management Team
International Institute of Social Studies, Erasmus University

Object: Proposal for in-person fieldwork in France

Dear ISS Crisis Management Team,

After careful consideration and consulting my supervisor dr. Oane Visser, I would like to submit my proposal for in-person fieldwork in France for my MA Research Paper (RP). Since the beginning of the RP process, I have been considering doing in-person fieldwork with peasant farmers and a cooperative advocating for peasant-driven technologies named L'Atelier Paysan (AP) in France between June 15 and August 30 2020. With the Covid-19 situation, I have been considering the possibilities of conducting fieldwork with diverse methods, through video-call, telephone, emails interviews. However the latest updates and relaxed measures against the coronavirus have encouraged me to apply for in-person fieldwork. Like in the Netherlands, in the past weeks, the French government's measures have been progressively relaxed. To understand the current situation, I have been going through the French (Gouvernement.fr 2020) and Dutch governments' (Koninkrijk der Nederlanden 2020) as well as European Union (European Union 2020).

According to those sources, it is at the moment possible to move freely in France. Starting June 22nd "travels between mainland and overseas territories are allowed" (European Union 2020), entry and exit from France for tourism is allowed and there is no compulsory quarantine for travelers from the EU, Schengen area and United Kingdom (ibid.). The latest Dutch government's advice for traveling in France was declared as such:

"Laatst gewijzigd op: 15-06-2020 | Nog steeds geldig op: 19-06-2020

Frankrijk laat weer (toeristische) reizigers toe. De in- en uitreisbeperkingen zijn opgeheven, maar het kan zijn dat u aan de grens op symptomen wordt gecontroleerd. De lokale maatregelen die genomen waren tegen de verspreiding van het coronavirus zijn ook versoepeld. Daarom is de kleurcode van het land aangepast van 'oranje' (alleen noodzakelijk waakzaam. Bij een nieuwe uitbraak kan de situatie lokaal plotseling veranderen. Volg altijd de Nederlandse en de lokale coronaregels op. Zie voor deze informatie de rubriek 'Coronavirus'." (Koninkrijk der Nederlanden 2020)

"Last modified on: 15-06-2020 | Still valid on: 19-06-2020

France allows (tourist) travelers again. Entry and exit restrictions have been lifted, but you may be checked for symptoms at the border. The local measures taken against the spread of the coronavirus have also been relaxed. Therefore, the color code of the country has been changed from "orange" (only necessary travel) to "yellow" (note: there are security risks). You can go on holiday to France but stay vigilant. The situation can suddenly change locally in the event of a new outbreak. Always follow the Dutch and local corona rules. See for this information the section "Coronavirus" the Netherlands worldwide". (Koninkrijk der Nederlanden 2020)

According to the French Ministry of Foreign Affairs in the Netherlands (Nederland werelwid 2020), the current travel advice is “yellow” which means holiday travel is possible, but travellers should be aware and careful for risks. I have been trying to be as much informed as possible about the Covid-19 circumstances and current measures and restrictions France. Indeed, on March 15, with the announcement of closing of European borders last March, I decided to go back to my home/residence in Brittany, Western region of France, where I have been living for the past four years. I have been following my online education program there until now.

The current French government’s health and sanitary advice include respecting physical distance of 1 meter, washing hands regularly or using hydro-alcoholic gel, wearing mask in public space and limiting groups to 10 people in public establishment (Gouvernement.fr 2020). For public transportation, there are current measures to limit the number of people to respect physical distance and barriers. Compared to the Netherlands, France has had a greater number of confirmed infected people (160 093) and death (29 633) from the coronavirus (Gouvernement.fr 2020b). The country closed its frontiers on March 17 and implemented strict quarantine measures (closing of schools, public establishment and limiting travel to essential needs) (ibid.). Since May 11th, the country has been going through progressive ‘deconfinement’.

In order to conduct a ‘do-no harm’ fieldwork, I intend to follow the French and Dutch government’s and European Union sanitary and health advice to protect the potential research participants, others and myself. To do so, I will be using a mask, carrying hydro-alcoholic to disinfect my hands, washing my hands regularly and respecting a 1 meter physical distance with people. At the moment, masks are highly used and available (free or low price) in many stores and public establishment (community centers, city hall etc.).

I will follow closely France’s situation with the Covid-19 by following the local and national news on the radio and on the official websites mentioned previously. In case of possible anew outbreak, I will cease my in-person fieldwork and resume with online methods at my residence in Brittany. In case of doubts of symptoms on my part, I will stay at home and will request for an appointment at the closest health center and/or call for on-phone medical appointment. Having lived in France for the past four years, I am familiar with the public health system and services.

For my in-person fieldwork, I hope to be able to interview several peasant farmers at their farms. Until now, most of the potential participant are living in the region of Brittany. This region was the least affected of the coronavirus (Gouvernement.fr 2020b).

For in-person participant interview, I intend to inform the participant of the health protection measures I will be taking and will request her/his collaboration to practice them as well. I will inquire with the participant if she/he has been infected or has had alarming symptoms or has been in contact with an infected person in the past weeks. If this is not the case and she/he agrees to follow the proposed health protection measures, I will then proceed with interview and short farm stay (day visit to four days). In the case of a more-than-one day stay at the farm, I will bring a tent or use my car, which has a disposable bed, for sleeping. My means of transportation will be mainly by car (personal) and by available bus or train which apply health and security measures.

The cooperative L’Atelier Paysan has invited me to visit their headquarters and attend a seminar on June 26 2020. That day, the members of the cooperative will be preparing their general annual assembly and presenting new prototypes (agricultural machinery and tools) to some members of their teams. I have received an invitation on their part where they state that they are taking all sanitary precaution required for this event. With the possibility of

attending this event, I will be applying the same measures as for the in-person participant interview. This is an opportunity for me to meet in-person members of the cooperative with whom I have been in touch for the past month and to visit their workshops. Such event is key to me to reach out with potential participants for my RP and gain more “approachability” and “credibility” with them and the cooperative.

This said, I hope I have provided sufficient information and guidelines on how I intend to proceed with my in-person fieldwork. I remain aware of the possible risks for research participants, others and myself and look to apply fully “do-no harm” principles.

I thank you for considering my request and am available to respond to any question or commentary.

Regards,

Arca Arguelles-Caouette

MA in Development Studies Candidate 2019-20

International Institute of Social Studies, Erasmus University

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Appendix 2 Farmers in France, a divided population

In this socio-political turmoil, the largest farmer's union *Fédération Nationale des Syndicats d'Exploitants Agricoles* (FNSEA, National Federation of Farmers' Unions) has deplored the non-farming population's attitude and actions of "agribashing" (Gardette 2020; Van der Ploeg 2020). This overarching term describes the stigmatising attitudes towards conventional farmers, whether they are disruptive actions from animal welfare and environmental activists or government environmental policies (Van der Ploeg 2020: 602). The attention around the phenomenon of "agribashing" has enhanced the polarisation within the farming communities and unions and between the non-farming populations rather than raising the "needed debate on the crisis within agriculture" (Van der Ploeg 2020: 602). It is key to highlight that the French agricultural sector is historically highly politicised. This can be partly explained by its "cogestion" (co-management) structure between the State and farmer's unions representatives, established during the 1960s agricultural policy (Coleman and Chiasson 2002: 173). This form of collaboration generated strong transformative capacity in policymaking by the represented farmer's unions, particularly the FNSEA (ibid.). The FNSEA has historically participated in modernising agriculture in France and is still today highly represented in agricultural chambers, regional and departmental public advisory service entities (Gardette 2020). With this context, it may be relevant to locate AP within the agricultural political spectrum. Its advocacy for peasant farming communities and its partnerships with peasant farming and organic farming organisations situate it with the peasant union *Confédération Paysanne* (Peasant Confederation, CF). The CF emerged in the late 1980s as a "left" opposition to the FNSEA with strong social and environmental orientations (Ogor 2017).

Appendix 3 The DJA, the young farmers' payment

In France, a 'young' professional farmer is aged between 18 and 40 years old (Ministere de l'Agriculture et de l'Alimentation 2020) and can benefit from the DJA. When receiving the grant, the beneficiaries must comply developing their farming activities into a 'viable' farming unit within 4 years, i.e. generating sufficient agricultural income (minimum wage) (ibid.). The peasant farmers I encountered shared mix positions towards the DJA support grant. A few explain that it considerably helped them with major investments in setting their farm (secondhand tractor, manual tools, construction material for the shed). The DJA had contributed to equip themselves properly, while relieving some financial 'stress'. Others argued that this was a 'poisoned gift', because it required to follow a 'productive' and 'performing' mode of agriculture. Its condition to reach a 'viable' farming unit by four years, translated a rather capitalist mode of production, rather than a self-subsistence mode of farming.

Appendix 4 Aude's story of occupying space with her body

Many discussions with Aude encompassed challenges of being a woman in farming. She recounted various anecdotes with her use of the tractor. She explained that to her surprise, many people (still) associated the tractor as a masculine symbol. This was visible by the fascinated and gratifying gaze she would receive from neighbours when she would drive her tractor. Other cases were not as pleasant. Aude shared an anecdote of a conversation she had with a peasant friend's relative when she started her farming activities. She was visiting this friend for some advice and the uncle of the latter took interest in her project. At some point, he asked her with much concern "but who was driving the tractor?". Aude replied to him that she was lucky; she had found a model of a tractor that did not require a penis to start it. Aude's witty reply made me laugh. I enjoyed her subtle ways of contesting gendered farming symbols and imaginaries.

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