The Ecological Rhythm of Mastery of Non-Mastery: Disaster, Ecological Reparation and Biodiversity from Southern Italy

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Abstract

In Salento, since the bacteria *Xylella fastidiosa* outbreak in 2013, the frictions between temporalities of care and technoscience exposed the issues of the governmental state of emergency imposed since 2013. The disaster – a hecatomb of millions of olive trees – set its own temporality, dictated by the rhythm of the bacteria spreading through the environment. Drawing from ecological reparations in Salento's aftermath, and from co-evolutionary practices in Sicilian biodiversity, I will outline the features of the temporal experience and rhythms of an ecosystem, particularly those that can no longer be governed. These ethnographic insights contextualize and inquire into Mastery of the non-Mastery, a political and ethical stance colliding nature and culture: for Michael Taussig, MNM is the way to tackle climate change (2020). Wild and feral biologies in the ecosystem oppose the rationality of modern agriculture, while marginalized human-beings, forgotten plants or animals, and discarded lands stand out as *assemblages*, despite the pervasivity of market-economy and extractivism. If care, ecological reparation and coevolution retrace, just like MNM does, methods of production and reproduction of human/nature relationship outside the extractivist perspective, I question the role of technoscience to help build temporalities of care and ecological repair rather than human frames of mastery over nature.

Keywords

ecological reparation; mastery of non-mastery; Xylella fastidiosa; ecologies of care; fieldwork; Sicily and Apulia.

1. Introduction

This paper represents an attempt to position technoscience and its relationship with ecological temporalities based on two ethnographic cases, focused on agricultural, agroecological and environmental contemporary matters in the south of Italy. I try to develop a critique of the radical human control of nature and its effects, as exemplified by the established methods of management of ecological "emergencies".

I argue that a whole set of bio-security measures and practices are disturbingly familiar with those of industrial agriculture. The underlaying concepts of this critique are what Michael Taussig calls "Mastery of the non-mastery" (MNM) and in minor part, following the argumentation as a red-tread, the "matters of care" for how especially Maria Puig Bellacasa depicts it.

The main case discussed is the institutional management of bacteria *Xylella fastidiosa* and its aftermath in Salento, south of Apulia. At first, I will consider how wildlife, like insects and plants, have been under the lenses of Regione Puglia, the Italian Minister of Agriculture and European Union, and how these institutions tried to control the bacteria, starting from its ecologically-intertwined temporality. Secondly, I trace back the language of rhythmanalisis of a few agroecological farmers of Salento, framing their attempts to rebuild a healthy relationship with the soil: this relation is depicted, by their words, as a temporary and rhythmic "attunement" between the human and non-human.

I outline a literary review of the critiques toward the policies and the practices recommended or imposed by a certain technoscientific discourse in Apulia, regarding the outbreak and the eradication of bacteria *Xylella fastidiosa* since 2012 (Saponari et al. 2013). Concomitantly, a whole ecological reparations movement took place in Salento, attentive and responsive not only to the needs and the belongings aroused by the victims of the bacteria, the olive trees, but also to all the other components of the ecosystem, expecially the soil (Ciervo 2016). On one hand, I will discuss the role of technoscience in the extractivist and productivist approach of an agro-industrial entrepreneur. On the other hand, I will demonstrate how essential technoscience is to the ecological reparation of many different agroecological initiatives in Salento.

The second ethnographic case will inquire into the relationship between technoscience and agroecology, following Paola Quatrini and her team's Project Life Desert-Adapt. In Caltagirone, in the lands of farmer Michele Russo, a whole part of the farm, planted only with Indian figs, went wild. The data gathered on the explosion of biodiversity in 10 years represent the reason to think that any strategy or plan to contrast climate change have to hand over a part of control to wild and non-mastered non-human relationships.

2. Debates and Research Questions

The paper examines the impact on technoscience and knowledge production when mastery of non-mastery (Taussig 2020) and care (Puig de la Bellacasa 2017) are taken into account. The ethnographic cases are discussed under the hat of relationship between technoscience and temporalities, arguing how technoscience can be modeled to be a significant element of that ethics that Taussig calls "non-mastery" and how technoscience can participate to matters of care. Technoscience represents the main epistemological and practical device that western culture and governments rely on for the management of environment and its troubles (Edwards 2013; Hirsbrunner 2021; Pellizzoni 2015).

With temporalities I refer to:

> the human experience of time and the perception of the unfolding of changes (Fabian 2014; Bodei 2006; Puig de la Bellacasa 2015; van Aken 2020), as well as to rhythms, understood

> as the synchrony or asynchrony of multiple temporalities (Lefebvre 2004; Bonifacio and Vianello 2020; Milazzo and Colella 2021). (Milazzo and Colella 2022)

My aim is to understand whether and how human and non-human temporalities vary according to matters of care and non-compliance with control, and to seek if technoscience might be involved in the a-synchronicity I might call ecological failure and global meltdown. There is a connection that in this paper might be deemed central between non-mastery and care: interspecies care is also defined by relationships that are not over-determined and hegemonized by one of the actors. That's the measure in which care and non-mastery, inside the ecological and feminist approach, I believe should be considered in framing community technoscience.

I take "governance" as that form of policy and decision-making that is based on rules made in agreement with international actors, making environmental governance a non-exclusive prerogative of the nation state. Moreover, it should be noted that governance also refers to those structures and processes permeated by global capitalism, effectively being its own structural principles. These define environmental problems, even the evident ones, on the basis of antagonistic interests and relations of power and domination that, if on the one hand do not define the limits of growth at all, on the other hand find in the management of environmental problems new fields and terrains for capitalist accumulation (Pellizzoni et al. 2022). To this historical-materialist reading of environmental governance, one can add the critique of the practices of biogovernance, a form of biosecuritarian norms deployed primarily to protect the markets of invasive agriculture (Barker and Francis 2021).

The debate I address, is not only related with the current literature on the Xylella management, but tries to contribute to the critique that testify the advancement of the ecological thought in social disciplines, especially thanks to the recent publications of co-edited works by Dimitri Papadopoulos, Maria Puig de la Bellacasa and Natasha Myers from one side (2021), and Luigi Pellizzoni and the political ecology network on the other (2022; 2023). These situated research and approaches are here confronted with more philosophical and anthropological issues like those of Tim Ingold (2022a) and Elisabeth Povinelli (2016), whose production on ecology and science are considered a milestone in contemporary anthropology, as well as Michael Taussig (2018; 2020), who connects historical-materialism perspective with the anthropology of the body and language.

So, my research question is: how relevant is non-control to make time for other temporalities? As Povinelli notes (2016), we need a multitude of temporalities to shake the imaginary. This question raises many doubts regarding the epistemological and practical approach of technoscience, for it is often considered the indispensable ally of every governmental policy regarding the management of ecological disruption, including climate change. But what would happen if we take into account what Michael Taussig calls Mastery of non-Mastery (Taussig 2020)? That is to say, how to do and stay with things without being in control. Would that change our perception of temporalities, even making a new era of constitutively different coevolutionary and creation ties begin, to say it with Tim Ingold (2022a)? In this paper I inquire into the relationship between technoscience and non-human temporalities, and if and how technoscience will be providing means to cope with the complex and non-productive temporalities required by ecological repair (Papadopoulos et al. 2022).

A culture-of-care and an approach as that of agroecology, I will argue in the end, might be able to connect the technoscientific resources with that of minor things (Ghelfi and Papadopoulos 2021), as to let arousing scientific disciplines like microbiology and ecology re-direct narratives of climate change, contrast to desertification and policies against biodiversity erosion.

These ecostories are embedded and linked, for better or worse, with technoscience, and I argue in conclusion how we need to sought community technoscience, to reclaim alternative technoscientific practices and the right to make diverse ways of cultivating a "practicality" of life within the cycles of the land possible and not persecuted by environmental or biosecurity governance (Papadopoulos et al. 2021).

3. Methodologic Approach

The ethnographic field has been conducted since 2018 in Salento, and in Sicily since 2020. Many of the concepts and the interviews that lead to this paper have been shared and made possible by the joint work of Collettivo Epidemia[1]. The possibility of sharing knowledge and explanations with fellow researchers and friends has been particularly relevant for the field research conducted in Salento, since the discussions were based on notions of phytopathology, entomology and other disciplines that neither of us would have dealt with alone successfully.

The interviews considered here were held between 2019 and 2021 and recorded with the verbal consent of the participants. The ethnography between Sicily and Apulia involved more than 50 people, among farmers, agronomists and counts an average of two interviews for interlocutor. Anthropology of proximity constitutes the research epistemological framework, for at least two reasons. The first questions the distance between researcher and interviewed/observed. A relevant issue of the anthropology of distance are the political aspects of co-constructing the fieldwork with the interlocutors (Breda 2017; Zanotelli 2017), as an outcome of the attempt to reduce hermeneutic distance (Fabian 2014) or epistemological distance (Affergan 1991).

The second reason is whether the anthropology of proximity considers legitimate the "ethnography of the neighbour" (Gupta and Ferguson 1997) as a necessary form for the discipline to be able to deal with contemporary issues, so it is also an opportunity to reflect on the history of anthropological knowledge, tracing its political transformation starting from the inadequacy of those theories which, at the origins of the discipline, considered ethnography to be meaningful only and exclusively because it was carried out in so-called "exotic" areas and inhabited by peoples other than and distant from western culture.

All of the texts cited, whose translation from Italian to English wasn't available, were translated by the author, as well as all of the interviews cited, originally recorded in Italian or local dialects.

4. Xylella and the Spittlebug: The Political and Scientific Temporalities

The Salento peninsula is an area at the southeastern tip of Italy, where millions of olive trees have been affected by the spread of a quarantine pathogen, *Xylella fastidiosa* subsp. *Pauca* (Saponari et al. 2013). The European Union and the Italian National Research Council

(CNR) in Bari deem *Xylella fastidiosa* accountable for the Olive Quick Decline Syndrome (OQDS). Almost a year after the bacterium's detection in Salento, the regional council requested a "state of emergency", so that "extraordinary powers" could be awarded to the government. The request was supported invoking the bacteria's "great *rapidity* and effectiveness in spreading" to the trees, "thanks to the vector species Philaenus spumarius L., commonly known as 'spittlebug', an indigenous, common, polyphagous and '*ubiquitous*' entity"[2].

At the beginning of February 2015 the state of emergency was made effective for three months and renewed from there until today. *Xylella fastidiosa* was, at that point, already present in a large part of the region, and the landscape was undergoing relentless transformation: historical olive trees orchards, in some cases, quickly depleted into dead trees.

The main concern of the institutions was the hazardous impact of the bacteria on the valuable crops in Apulia and the rest of Europe. The emergency paradigm was drawing a specific future by taking into account only a designated type of temporalities. As Colella wrote: "Each epistemic culture produces differently not only the horizon within which to place what is necessary to know (Knorr-Cetina 1999), but also what becomes necessary to ignore (Böshen et al. 2006)"[3].

It can be useful to summarize the article I previously published with Colella, where we inquire into the wrongdoings of the emergency governments and the mistakes of technoscientific experts (Ciervo 2016). Specifically, we address the temporal processes triggered in the scientific official institutes by the finding of Xylella. The identification by the governmental approach of a Xylella pathosystem was based only on three elements, "diseased plant, bacterium, vector insect"; it constructs and defines the sole the temporalities taken into account. Excluding and ignoring every other form of life from the "equation", the institutions also came to refuse their first definition of the crisis, considered a complex of concomitant cause.

On their side, the movements defending the olive trees from the eradications, were challenging the actions taken by the institutions in order to frame, manage and control the emergency. Their counter-narrative was focused on the "actual rhythms" of all the different species involved in the ecosystemic depletion that was having place. The alternative researchers and scientists from local competing universities and institutes brought a greater number of other species in their observation, studying their relationship with the olive trees decline. The activists could easily visualize that at stake there was the ecosystemic future of the whole Salento's environment.

With Colella, we also addressed "the emergency as a way of managing time (Pellizzoni 2020)"[4], identifying the normative reason for this temporal "dictate" in the Council Directive 2000/29/EC[5], whose aim is to regulate the presence of quarantine pathogens on European territory.

Violent and urgent timelines have been directing the actions towards a complex system like that of a collapsing environment, simplified and reduced to the pathosystem, made of the sole relations between the olive trees, the spittlebug and the bacteria (Bandiera 2020). As the activists pointed out for years, the action plan was not to be based on the eradication of Xylella, but rather on the timeframes necessary for all life forms in the ecosystem to find a new equilibrium[6]. The main field of confrontation between the institutions/the researchers and "Il Popolo degli Ulivi"[7], were the measures prescribed to contrast the diffusion of Xylella. Among the measures, olive tree eradications were seen as policies of land's death and genetic heritage's loss (Casid 2019).

Through extensive studies on the timelines of the spittlebug's reproductive cycles, the Italian Civil Protection Department published a "control" strategy, carried on mainly by chemical means, for the entire region (Milazzo and Bandiera 2021). The understanding of the *Philaenus*'s temporality was considered *urgent to know*[8]. What stood out to my eyes, as the research went forward, was the conviction and pretense of the institution to gain control on the forms of life in the landscape, like the "sputacchina", that at some point was expected to be completely under control and defied.

This unsustainable certainty on the part of the institutions, helped to create a perception in the social and environmental movements of the imposition of an ecologically devastated future (Davies 2018). The toxicity of which would be derived from the use of chemical drugs and herbicides, which refer to:

> a future of pollution, a temporality of devastation and death (Alliegro 2012, Papadopoulos 2021, Davies 2018, Hoover 2017). The synthetic products functioned as an organizing center of temporality: in addition to considering its consequences in the territorial future, retrospectively the movements integrated pesticides and chemical herbicides into the aetiology of olive disease (Collettivo Epidemia 2019; Colella 2019; Vacirca and Milazzo 2021). (Milazzo and Colella 2022, 106)

The depressing outcome is the contemporary landscape, that has been produced not only by Xylella, but also by the attempt to force its exclusion from the ecosystem: the olive trees plantations have been either cut up or eradicated, leaving dead lands beneath. Some abandoned fields show resurgence, whereas the wild sprouts of the olive trees risk every summer to burn for the lack of care of the dried grass.

5. Soil and Climate Change: Ecological Movements Temporalities

From what depicted above, it seems that technoscience did anything to make it worse. It's not exactly like that as I will explain in the last section. Rather, what could have been done differently?

The bacteria's temporality becomes more understandable if we consider it and the temporalities at large as the outcome of interspecies' co-construction and negotiation. The *Xylella*'s complexity is, for example, that its temporality can only be understood as intertwined ecosystemically with an entity like the "sputacchina". The failure of the institutions to get ahold of this aspect left the movements of farmers and activists alone in trying to repair and attune to the non-human rhythms of complex "soil temporalities".

Activists close to an environmental conception of health connect the toxic history of Salento to the present, something that has not been considered by the official institutes of research. As Antonio, a traditional olive oil miller, explained, the present crisis is rooted in Salento's "bad past", when in recent times huge amounts of pesticides were widely used to ease the agricultural work, at the expanse of biodiversity and interactions.

As written elsewhere, Antonio exacerbated "the radical simplification" that had largely taken hold in Salento, corresponding to the spread of pesticides as a common practice in agricultural

care (Tsing et al. 2019; Vacirca and Milazzo 2021). One of the main theories circulating among the activists was the idea that Xylella had been so deadly for the olive trees because the roots were actually grasped to an already dead and sterile soil. In this perspective, the institutional guideline that imposed the use of pesticide to control the bacteria, was jeopardizing the olive trees and the whole environment's capacities to survive the crisis.

Consciousness about soils recently erupted in Salento "thanks" to the disaster (Vacirca and Milazzo 2021). The tales from the past started to circulate, about 1960's kids running after cows and horses to collect their droppings, in order to receive praise by their farming parents, later merging the precious manure to the stony land, slowly becoming an arable land.

The soil temporality is not just found in the past. On one hand, the past and the soil-memories have an active role in transforming and re-shaping the present meaning of olive trees; on the other, soil temporality also bonds humans and microbiotical life in the future. Activists and microbes are allied in building up fertility and ecosystemic equilibria. This alliance has a specific role in depicting the future-scapes of Salento, like other elements that point to the fact that soils have been taking a symbolic role in the post-crisis efforts. One of these, is the experimental practices conducted by a farmer-activist of Presicce, Roberto Polo, and micro-biologist Giusto Giovannetti (CCR)[9], among others, since 2015. Their attempt to save the olive trees focused on their microbiome. For that, it was essential to recover and establish the soil's health as the source of the ecosystemic equilibrium, rather than focusing on a single aspect, like the killing of the spittlebug or of the bacteria. In their view, a healthy soil would have provided the tree with everything needed to resist. The whole status of the tree would have changed for the better. A-specific solutions, to be maintained with the hard and slow work on/of the soils, fed for many months with the missing fungi and micro-organisms: the biodiversity of soil's microbiome, they believed, erased by decades of chemical abuses, with time would regenerate.

A similar concept and practice were developed by Cooperativa Karadrà as explained by the president Roberta Bruno:

> The average amount of living matter, organic matter, in the soil in southern Salento is 1.3%. If there had been a long-term vision, (on the part of the ruling class) the organic system would be the current system, of all, for a long time. The criterion of productivity has been followed and not that of the yield of the land over time... that is why I say: what is the point of private property, of being able to decide on lands that should be able to produce for millennia? The question arises even more, if there is no long term in the projection, you find yourself having to work on an emergency basis... [...] If you decide that a hectare of land must produce 10 for you, while a hectare of land can produce 2 for you, you are doing damage to a collective... and here we come back to the discourse on private property, another cornerstone of capitalism and patriarchy. Freedom is conceived as that of owning... but freedom is to live free of disease, to think that in 20-50-100 years that same area that served me to survive may also serve those who follow me. We work in regenerative agriculture. We go out and do reclamation. [...] It is necessary to leave margins to the fields, wild plants grow... we are experimenting, we invest annually to improve techniques, to interact with the soil with macerates and materials to improve the crop and the yield. (Aradeo, LE, 10/03/2021)

Cooperativa Karadrà's experience pushes temporality of soils and of human-soil relations to re-establish their synchronicity, outside a paradigm of productivism and extractivism. Regenerative agriculture is now a need in Salento, and there is no other option for those who, farming without chemicals, have to enrich the soils that have given everything they had.

Soil-regeneration temporality is particularly relevant for my argument for different reasons: first of all, because soil-regenerative practices are the extreme opposite of agro-industry. Specifically, agroecological practices with soil are entrusting control to non-human entities, unlike agro-industry, whose main activity has been, for decades, to wipe out life from soils and put the minerals and molecules back in with a wholly human-led process.

An ethnographic example comes from Gioele, farmer and son-in-law of Roberto Polo, also based in Cape Leuca. His ultimate form of militancy for the soils responds to the urge to chip the trunks of dry olive trees and leaving it on the ground. This is the only way all of the secular energy embedded in the trunks might be given back to the soil, for they might be burnt or worst (Lyons 2020)[10]. Gioele's practice is another example of how to be in the network of the living, where "making time" for the soils means building relationships of care, activating multispecies reciprocities between humans, olive trees, insects, soil's microbes. The temporality that is built by all these interdependent forms of life, is one that is negotiated and composed by complex and always renewed relationships (Lefebvre 2004; Puig de la Bellacasa 2015). The meaning of Salento's ecological crisis is embedded in the reciprocity of practices of care, which nonetheless are not the outcome of human-led processes. Even if putting the olive trees organic matter back in the soils is a human choice made by Gioele, it operates in the absolute dependence of the work of an unknown number of microscopic entities, benefitting the biodiversity in its complexity.

I think it's particularly meaningful that care and attention to soil's temporality are not only able to address and even counter the effect of the Xylella pathogen, and the related eco-systemic disruption, but also the challenges imposed by global warming. It's not even essential to consider the proliferation of *Xylella fastidiosa* as an aspect of climate change – something I'd strongly suggest. What is going on in Salento indicates that Bellacasa's claim "the time to care for and better for soils is now" (Puig de la Bellacasa 2017), is valid to counteract the olive trees depletion and against climate change.

This statement by Maria Puig de la Bellacasa shows how important the *temporality* of the bacteria *Xylella fastidiosa* is: to disclose the role of soils and unveil the whole ecosystemic course whilst positioning in the present time of plural environmental crisis. Its solution could not be nothing else than more-than-human, which does not mean exclusively non-human, as humans are still one of the most important part of the "equation".

In order to be clear: what could have been done differently is on a completely different timescape. So, what is the point of criticizing technoscience? We should not be forced to take side between caring relationships and technoscience (Puig de la Bellacasa 2017; Ghelfi 2015; Papadopoulos 2018). We have to upstand outside temporal paradigms as the "emergency" when we are trying to cope with climate change and environmental problems, because we need epistemic strategies and experimental research trying to compose assemblages, both in knowledge production and ecosystemic production (Henning 2015; Randazzo and Richter 2021).

The importance of taking time for assemblage and research is a need very well reclaimed by organic farming, as Roberta Bruno says:

> You are investing today and in six months you may have the result. Even in experimentation and research you have the problem of time. We are in transition. We should have the honesty to say that we are not able to be productive today, we need to be approached by the world of scientific research in the broadest sense, which arrives at new equipment, at new patents, but which also arrives at agricultural preparations, at macerates, in order to be able to totally replace agro-industry. That is why the worry on our side has always been research. Where the fuck is it? I don't want to react badly when they come to me and propose the possible economic correspondence between investment in biodiversity and production. (Aradeo, LE, 24/02/2021)

Roberta Bruno is claiming the need and in some ways the right to access research and technoscientific counseling: "minor things", just like the microorganisms of the soils and marginalized biodiversity, would finally see their potential to outsmart agroindustry fulfilled from the additional knowledge provided by technoscientific expertise.

6. Coevolution and the Ecosystemic Rhythms: Temporalities of Minor Things

One of the most interesting aspects of the temporalities of the minor things, as soils, biodiversity, or the wild plants, is how unseen and unreplaceable is the work they do. We also should consider that they take not more or less time, but just time, like the search for the "salvation olive tree" shows.

When the local varieties of olive trees started to deplete, the Ministry and the local entrepreneurs, started to worry. G. M. is the most important oil-miller and olive oil producer of Capo Leuca, and president of the consortium Terra d'Otranto DOP, whose aim is to publicize the local olive oil production. G. M. considered the risk of losing the two historical *cultivars*, Cellina di Nardò and Ogliarola Salentina. Salento's olive trees plantations could not compete with other larger-scale economies, so the local entrepreneurs really had to rely on story-telling and distinctiveness through genetic historical heritage, in order to have a semblance of olive-economy.

Yet, because or with Xylella, even the "Giant of Alliste", an eight centuries old olive tree begins to die. The best solution, for G. M., was "to find another cultivar and autochthonous: imagine all the narrative you can build around this cultivar born in Salento!". The only and poor solution the Regione came up with was to re-plant varieties or hybrids with no historical nor narrative value, like Leccino or FS-17[11].

G. M. is a different entrepreneur than Bruno from Cooperativa Karadrà. He does not really believe in the urgence of organic farming or regenerative agriculture, as compared to conventional farming. He is the kind of agronomist that cut the ties with wild and spontaneous plants in the fields, in order to rationalize the farming techniques and maximize the production. Yet, when the Xylella crisis destroyed his fields, he had to turn his gaze to the wilderness: that's also where "mastery of non-mastery" gets into the story.

G. M. was looking, like many others, for the "green olive tree in the desert". This olive tree had to be the outcome of a spontaneous crossbreed, enabled by the wild relationship between

domesticated and wild olive trees, insects, birds. It also had to have certain characteristics to be interesting, like being very productive, not vulnerable by Xylella or other pathogens, possibly not requiring too much water and not taking too many years to start producing.

G. M. mobilized the technoscientific entourage of CNR and Regione Puglia with two projects: Xylor and ResiXo[12]. Both projects aimed to receive photographic reports from citizens of green and productive olive trees, and to collect genetic material of the plants, to be PCR-analyzed. The most important information for G. M. was the genomic code: to become the "olive tree of salvation", the plant had to be a completely new variety, registered by no other patent of no other territory in the world.

> So what is the idea? A scientific fact, for sure, because it would be the first time that without genetic improvement and with random recombination a plant resistant to the bacterium is born. That is, with natural genetic improvement, it is in itself the first time that a genotype resistant to the Xylella bacterium is found and productive, and it would be a unicum. A scientific fact is also the fact that if I have to make crosses as I am doing, and this independently [not with the CNR], between two cultivars for example Leccino and Favolosa, two resistant cultivars, the hope is to obtain a super resistant one with better characteristics as drupes and oil than the two parental ones. This path can take 20 years. Instead, you search for the seedling in the countryside, in the escarpments, in all the uncultivated or abandoned land, there are these shrubs that produce, but they are already 15 years old. So, at 15 years old... (Gagliano del Capo, LE, 02/03/2021)

So, there is an aspect of temporality and technoscience that the action of wild crossbreeding solved by ecosystemic spontaneous services:

> The wild olive is still born from seed, but it is the child of a pollination between wild and a cultivar, or between wild. So you have the possibility from a scientific point of view to shorten that time needed for genetic improvement by mass selection. Nature took care of that over the years when we weren't interested, so I'm going to see the fruit of that work of nature today. (Gagliano del Capo, LE, 02/03/2021)

G. M., thanks to something humans oversee, managed to cut the time to find the new autochthonous olive tree born in Salento: somebody found, in the only place where it could have been found, the olive tree of salvation. On the side of a road, between Presicce and the sea, *where it would not bother*, a wild olive tree has spontaneously grown, to become today the new autochthonous variety of Salento, to be reproduced and spread around.

Is it the kairological event that gives birth to a new co-evolutionary history between olive trees and Salento's people?

Tim Ingold refers in his last book to the Greek word "kairos: the moment that must be seized in any process of skilled work, when 'human action meets a natural process developing according to its own rhythm'" (Ingold 2022, 119). He dwells around the fact that any human, so to say our G. M., to acquire "fine judgement: of pitch, velocity and direction", has to make certain assumptions and calculations, "calculated as time to target" (*ibid.*, 282):

> [...] all business is conducted in the plane of the present. It is a world ruled by the computational logic of the algorithm, which sets out a step-by-step programme for problem solving. [...] Maker and materials, going along together, arrive at a solution that emerges only in and through their collaboration. Here, attention and response take precedence over computation and execution. (*ibid.*, 282-283)

Attention and response, conducted in the plane of the present, represent the capacity to grasp at once "pitch, velocity and direction". This mode of "attunement" resembles what Henry Lefebrve defines as eurythmia:

> He hears the wind, the rain, storms; but if he considers a stone, a wall, a trunk, he understands their slowness, their interminable rhythm. This object is not inert; time is not set aside for the subject. It is only slow in relation to our time, to our body, the measure of rhythms. An apparently immobile object, the forest, moves in multiple ways: the combined movements of the soil, the earth, the sun. Or the movements of the molecules and atoms that compose it (the object, the forest). (Lefebrve 2004, 20)

In my interpretation, when a human is capable of attuning with the surrounding entities and materials in this way, in such moments the foundation of a new coevolutionary tie can happen, like a new historical alliance between a variety of olive tree, a territory, and a people. Does this mean anything similar for G. M.? Did he experience rythmanalysis or a shared direction, according to the networked connection of the surrounding environment? Does he "question his very modern understanding of speed, and of complexity", in order to experience time as "perceived not chronologically but kairologically: it lies, that is, not in the succession of events but in the attunement of attention and response to rhythmic relations" (Ingold 2015, 89)? The fact that G. M. is buying a patent over this spontaneous olive tree raises many doubts.

Spontaneous biodiversity showed how rational temporality can be outsmarted by wild relations, and how they are unconceivably precious. Nonetheless now it risks being re-comprehended, following G. M.'s plans, to reconstruct a temporality of single-crop monoculture and productivist rhythms.Yet, one might ask why would any technoscience discourse have to deal with rhythms and the perception of the environment. Rythmanalysis is actually a "skilled revelation of skilled concealment" (Taussig 2020), capable of forecasting by means of preventing. It works on the long run, on different plans of temporalities, and we have yet to recall that events that destroy what we believe durable and given, just like millennial olive trees, actually happen. With the global meltdown we are called for re-negotiating coevolutionary ties with the etero-specific, as much as we are called to re-build new relations continuously.

Is rythmanalysis a practice capable of paying attention to those minor things that are so dear to the ethic stance Taussig called Mastery of non-Mastery? That is, what capital and modern agrarian culture have discarded and marginalized in order to dominate the relationship between humans and nature. The lesser things, such as those techniques and forms of life put aside by capitalist productivism, were not interesting because with the mastery of modern techniques and the aid of chemistry applied to agriculture, their observation had in fact lost its importance.

Rythmanalysis and MNM are both *crafts* of minor things. During my ethnography in Cape Leuca, I saw an intonation and an attunement happen between humans and the surrounding entities by means of photography and painting. An ecosystemic moment was captured similarly by Jànos Chialà[13] (Figure 1), at the end of August 2020. Yet, the flaming olive tree recalls the same anthropomorphized form of the olive tree that Marco "Terraiolo" used in his artistic composition five years earlier, when the epidemic was only at its begins (Figure 2).

Rythmanalysis here merges the perception of the disaster of the environment with its harsh materialization. The fire is the result of an inexorable and generalized desiccation, witness to the overwhelming impoverishment of ecosystem conditions (Collettivo Epidemia 2020) of ecology.

The painting and the picture both reveal a crucified olive tree, an Olive-Christ with red blood bleeding: the present and the future are united by the painter's gestures. It is a domain of language, MNM, that alone allowed Marco to foresee the image of the present time and to embody it, through the aesthetic and artistic perception of the present, past and future temporalities of ecology. Taussig would argue that the painter's gestures are somehow a kind of "skilled revelation of the skilled concealment". Is he, thanks to his hands and art as Lefevbre suggests, transforming beforehand "everything into presences, including the present, grasped and perceived as such; integrating these things – [...] these trees – in a dramatic becoming, in an ensemble full of meaning, transforming them no longer into diverse things, but into presences" (Lefebvre 2004, 23)?

We don't observe here a mere overlapping between the picture and the painting, but, instead, we recognize the movement gathered in a simultaneous perception of all the temporal difference that has occurred over these five years, and of the realization of a destiny that was already perceived and foreseeable as inexorable (Lefebvre 2004; Bonifacio and Vianello 2020).

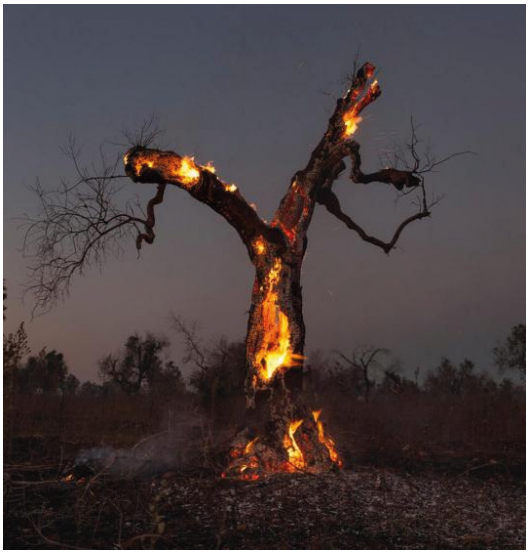

Figure 1.
Janòs Chialà ©, 2021.

Figure 2.
La crocifissione degli ulivi, Terraiolo, 2015.

Sometimes loose coevolutionary ties are still so meaningful that they leave traces on our culture. In Salento, agroecological farmers asked themselves at what stage our civilization is in its relationship with olive trees. The millenary relationship is knowing, especially in Salento, a deep transformation. Symbolically, the grafting of the olive tree with the branches of the "olivastro" (the wild olive tree found on the side of the road), recalls the kairological moment that Saint Paul, the most important Christian Saint in Salento, describes as the moment everything changes. In the letters to the Romans, Saint Paul attributes to the grafting of the wild olive tree the meaning of a new history for the people of God. Christ is, no less, embodied in the wild olive tree of salvation, grafted with a kairological gesture into the love of God (Lettieri, *forthcoming*). This grafting seizes the moment[14] and simultaneously attunes history on new temporalities, that of the catastrophic expectation of the apocalypse and the messianic return of Christ.

This gesture also severs the history and the time of Israel from that of Christianity. Yet, what is most meaningful of the Olive-Christ, is the election of the minor: the grafting of the wild olive tree is actually no more than the rejection of "the powerful, of the elected, of the noble, and as such the acceptance into the love of god of the ignorant, the marginalized, the pagans, the weak". Already once, a new salvation coming from the wild, as Saint Paul says, founded a new epoch.

7. Mastery of Non-Mastery and the Wilding

At the antipodes of G. M.'s actions and position, there are Cosimo Terlizzi's fields in the countryside of Carovigno, in northern Salento. There, inter-species care relationship and the decentralization of the human from the ecosystem become the driving force behind the criticism of the agricultural-social history Salento.

Filmmaker-artist Cosimo Terlizzi set up an atelier in the middle of an olive grove. Combining agronomic, artistic and relational practices, in the Lamia Santolina, the ecosystemic complexity is accompanied and increased. Cosimo, coherent with Roberto Polo's microorganic approach on soils, enhances the biodiversity under the olive trees to refrain the attacks from the spittlebug. He started to take care of the life forms in his olive grove, inviting more than 400 species to join and relocating to the centre of his field, including around 200 officinal Mediterranean shrubs that had been forced onto the roadside. "I got the plants either from the roadside or from markets. There is this gentleman who sells frayed, ugly plants, they are the best there is". He put what was marginalized back to the center.

Sympathy and compliance with the "wild" do not come with a drastic refusal of technoscience. Cosimo, as Roberto, decided to avoid the chemicals prescribed by ministerial regulations to destroy the vegetation on which the spittlebug reproduces. Yet, both of them entrusted and experimented the trials coming from microbiological research. They had to cope with microbiology's "inefficency", compared to the official science's mastery of nature.

Wilderness, micro-organisms and sensoriality seem to share the same marginalized position in the productivist system of value: they are *ignored things.* Puig de la Bellacasa argues that the *ignored things* are the most important and care-taking forces of reproduction of life[15] (Puig de

la Bellacasa 2017). Biodiversity and soils, are not "in the horizon within which to place what is necessary to know (Knorr-Cetina 1999), but also what becomes necessary to ignore (Böshen et al. 2006)" (Milazzo and Colella 2022).

One should certainly not make the mistake the spread of biodiversity and soil-fertility as simple natural processes, they are anything but easy. Probably that's why interspecies relations write their own philosophy of evolution outside extractivism and determine healthier environments as wholes. As neglected, they embody today the ethics of the Mastery of non-mastery. Just as industrialization and agro-industry, the plan of actions developed against Xylella by the University of Bari and other research institutes had the worst impact to the unseen plants and insect "outlaws".

Minor things are what constitute the base of the Mastery of non-mastery, and the unseen is often called upon by Michael Taussig to depict it, just like in Emily Dickinson's poem:

> It was a common night,
> Except the dying; this to us
> Made nature different
> We noticed smallest things,
> —Things overlooked before[16]

Moving to Sicily and to another case of technoscientific approach to agroecology, Paola Quatrini was thinking about "things overlooked before" when she proposed with other colleagues the Desert-Adapt project. I met Paola with Tommaso La Mantia and Raphael Bueno in the fields in Caltagirone[17]. They were monitoring an hectar that was let wild. As Paola herself describes the project:

> The Life Desert-Adapt has as main objective to experiment with land management that somehow reverse trends like desertification, especially in southern Europe. [...] The project is tested in ten farms partners. These are farms that tell us their problems, their limitations, their difficulties. This project brings farmers together, puts together technical researchers so this adaptation model is really a farm planning, shared between landowning farmers who experience on their own skin, on their land. The project includes 19 partners, part of which are technical research and development and parts are companies, farms and municipalities. (Building BRIDGES, *Suoli, clima, biodiversità: Come adattarsi alla complessità naturale, culturale, scientifica?*, 8/06/2022)

In this socio-technical environment, they decided substantially to experiment on Michele Russo's land. "Anything that diversifies a cultivated environment results in better ecosystem stability" says Tommaso La Mantia to deepen on the methods they embrace:

> Let's start at the end: all the different ways of declining agriculture as an alternative to industrial agriculture are nothing more than a way of trying to reduce as much as possible the distance between the natural and cultivated-man-made environment. [...] all things that are in antithesis with conventional agriculture, that what operates is basically a process of simplification

> of the ecosystem, to the point of reducing the relationship simply between soil and culture, where the soil is seen as a substrate, more or less inert, that you just have to provide it with resources that then have to be transferred to the plant. And everything is a simplification process. I always say when the farmer does careful farming, he must be an educated farmer who must necessarily interact a lot with the ecosystem, he must know the plants, the diseases, the balances, he must know when it is necessary to intervene, always aiming to intervene as little as possible. And when it is not necessary to intervene. On the other hand, the farmer who applies industrial agriculture is a farmer who often does things absolutely on a calendar, and this was a normal agricultural practice until my agronomic training, even. The practice of calendar treatments was the norm. But he is also a farmer who also has to contend with increasingly important technological facts. (Palermo, 14/03/2022)

In the experimental fields they measured the impact and the results of the "alternative" way of farming.

> If we have to measure, we must necessarily refer to quantitative parameters. We must be able to measure these ecosystem services with certain parameters, and give rewards according to the achievement of certain ecosystem services. How many pairs of birds are there in a hectare of maize? Zero with chemistry. So, chemically cultivated apple trees zero birds. Now cultivated with an integrated fruit-growing system with nest boxes, there are 10 pairs of birds, it is an achieved value. Then there's the problem that the "torcicolli" go and block the irrigation pipes, and so what? We'll have to find a solution and live with it, because it's not really simple, we have now increased biodiversity in our countryside because there are pigeons... parrots, except that parrots are aliens, but then you have to cover everything because the pigeons eat the vegetables. So, this aspect here is also a "romantic" view, birds have increased, yes it is a parameter, I am happy, I am an ornithologist, but what is the reflection on agriculture, they often cause or are problems. So yes I have to increase, but then I have to find solutions to live with them, and in this sense alternative agriculture to conventional agriculture must continually come to terms with new problems and solve them, find ways to live with them. (Palermo, 14/03/2022)

The measuring of ecosystemic services happens in order to verify and certify who and where something is going toward a richer ecosystemic equilibrium, even in an economically productive environment. Because, concludes La Mantia: "Yes, we have to have methods, how to say objective, I use this term in inverted commas, scientifically, to be able to say that one agricultural system is better than another".

Yet, on the fields of Michele Russo, there was something else that got the attention of the scientific entourage. It is the abandonment of a 30 years old Indian Figs conventional crop, for a period of time that can't be earlier than 15 years, as memory and the spontaneous plants tell to Michele. The aim of the observation of the abandoned crop is briefly described by the farmer himself, Michele Russo, speaking in the forest fluorescent of incredible diversity of plants, smells and colors:

> It was a conventional Indian fig orchard, the plants are 32-years-old, the land was perpetually tilled.The abandonment allowed me to observe what the renaturalisation process of a Indian fig grove is. The Indian fig behave as a primary succession plant, I was able to observe the other plants what spaces they manage to find, so it was my main observation point. What was happening here, we replicated on the other side. Clearly, always bearing in mind production, because on this side it is almost zero, or at least the figs are complicated to pick. But there are other things, asparagus, mushrooms, here there was a sea of "gambesecche", meadows looked white. What I invite you to observe is the speed with which the maquis plants, trees and shrubs are growing in a Indian figs orchard. In an orange grove abandoned after 10 years does not give the same results. The Indian fig for a whole series of concauses, which we will summarise as the Indian-fig-effect, allows the plants to do well when they are small, and the birds come to sow and they are protected in a suitable microclimate and grow quickly. This oak tree that you are touching I don't think is more than 8 years old. Because when we abandoned it there was nothing. I should show you the pictures because you can't believe it. (Caltagirone, CA, 02/04/2022)

Wilderness showed a pattern to follow to contrast desertification with the most efficient natural method, "with the aim to increasingly reduce every kind of input". This means to let the forces of nature do what they do, with their time, which is the re-naturalization of an environment and the building of a more diversified ecosystemic equilibrium, observing from a lateral position. Also here, a new variety of peach is born thanks to wild crossbreeding, showing to be more resistant to many illnesses of this crop.

One of the most interesting aspects is that this wasn't even the specific aim of the project. Yet, being close to the wild processes showed a new way of proceeding against desertification, whereas until now thousands of trees have been planted without care just to die in desertifying land. Now to see that the naturalization coming after a fig orchard is abandoned is so rich and spontaneous, gives direction until now unexplored by technoscience or governments, something that they will not oversee from now on, since it's being measured and tested.

I introduced to professor La Mantia the concept of mastery of non-mastery by Michael Taussig: "You say we are the controllers, because otherwise it's a forest. But there's mastery and one side and on the other side there's non-mastery. Isn't there the capacity for mastery of non-mastery? Is there the capacity to be in a relationship of non-mastery with something and also be OK with it?"

> T.: "Yes, but that's what in this really organic or sustainable farming actually happens, we don't have total control of all the biological parameters, but it's not completely like that. When we talk about a cultivated field, we are talking about a field in which we decide everything that happens in there. We can be aware that we want what happens in that field to be as close as possible to what happens in a natural environment, but we are the controllers. Yet, I don't control the biological *tiny* parameters, insects, parasitoids, I don't control them I leave them that is to say to free evolution knowing that in the end *free evolution* is an advantage for me. (Palermo, 14/03/2022)

Technoscience and agroecology in this project merge together against desertification with the unexpected help of un-controlled wild relationships. Michele Russo intervened against the Ailanto, an alien-invasive species. But at some point, he didn't cut them anymore, because the invasiveness was self-controlled in favor of wider forms of life. Minor things, as La Mantia and Emily Dickinson put it, are for Taussig the place for Mastery of non-Mastery. Proximity, as well and a somatic attention to the ecosystem wellness and balance, have been fundamental in producing a new path in scientific research and farming practices against environmental depletion.

8. Conclusion

Temporality for agriculture is at the same time about "patience" and "hurry", when is time to harvest and the weather is uncertain (Teti 2018). The same has to be valid for technoscience in order to help in:

> our journey through the death-space of planetary demise. It makes not for an absence but for a new sense of connectedness, not just new connections but a new quality of connectedness [...]. Confronted by the specter of planetary meltdown, I am aware not just of a connection but of a sense of connection attentive to "things overlooked" as a step toward MNM (essential, I assume, to helping us out of the present pickle).

Do the "olive tree of salvation" born from misery and misjudgment, on the side of the road, or even the new variety of peaches and the wild oaks, mushrooms, olives and blackberry that now inhabit a previously abandoned land, account for:

> the making of mythologies or rather meta-mythologies or post-mythologies bound to Walter Benjamin's idea of "reactivation of mythic force," as when he writes, "Capitalism was a natural phenomenon with which a new dream-filled sleep came over Europe, and through it a reactivation of mythic force." (Taussig 2020, 56-57)?

More than human temporalities call for different co-evolutionary ties: time and new sense of connectedness, for Michael Taussig, resonate with mythic force, that of "Benjamin's idea of 'the dialectical image' charged with 'the time of the now', where past and present coalesce with the rise and the fall of the sun" (Taussig 2020, 57).

Is this ethnographic parade anything more than my endorsement to what Maria Puig de la Bellacasa unravels for technoscience and care? Relationships of mutual care between soil, humans and any living species, might become a viable alternative of reformulation of technoscience. We need to be capable to move away from a productivist perspective, "from tensions in soil science around the imperative of progress to conceptions of soil as living, and to related practices of engagement with soil as a food web of which humans are part" (Puig de la Bellacasa 2017, 205).

To live with the body in climate change, to live the proximity with non-human forms of life, to look and even search for ignored things is to enhance connectedness that produce more-than-human temporalities and more-than-human knowledge.

Notes

[1] Collettivo Epidemia was founded in 2018 precisely with the people sharing an ethnographic field or journalist investigation in Salento in that period. After that spontaneous experience of research together, we became a larger group with diversified interests, but a common editorial project and research approach.

[2] Regione Puglia, deliberazione della Giunta Regionale n. 1842 del 5 settembre 2014, "Richiesta dichiarazione stato di emergenza fitosanitaria e conseguente emanazione di specifiche norme per la eradicazione e il contenimento delle infezioni di *Xylella fastidiosa* e adempimenti conseguenti".

[3] Cfr.: Milazzo and Colella (2022).

[4] *ibid*.

[5] 2000/29/EC is available at this link: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32002L0089.

[6] Cfr.: Milazzo and Colella (2022):

> With the subsequent declaration of a state of emergency in 2015, a rearticulation of temporalities between technoscience and decision-making of crucial importance takes place. The time of political decision-making runs much faster than the time required to reach a techno-scientific consensus (Collins and Evans 2002; 2010). The "pragmatics" of political action strategically decides to ignore some aspects to the detriment of others (Mcgoey 2012). In this case, it decides to focus on the triad consisting of pathogen, vector and host, leaving out the other multi-species relationships, secondary to what was urgent to know at the time. Research on the *Xylella fastidiosa* bacterium in Europe is placed within such emergency frames.

[7] The authors refer to an organisation of activists called "Il Popolo degli Ulivi". It is a movement that has brought together different associative realities from civic and political activism and environmentalism. A galaxy of movements that with some of the exponents of research discussed their vision of the pathology (Colella et al. 2019). The Olive Tree People was officially born on 29 April 2015. They don't exhaust the scenario of protesters against the phytosanitary measures, but represent a significative case.

[8] The knowledge around the reproductive cycles of the spittlebug was also necessary in order to "optimise" the use of pesticides.

[9] Centro Culture Sperimentali di Aosta.

[10] Unscrupulous and concealed companies grab thousands of olive trees, take them to burn in biomass power plants, leaving nothing but empty holes on the lands. Gioele travels all along south Salento to chip the olive trees and regenerate the land, hoping to arrive before fire or power plants' emissaries.

[11] "We will lose that added value as a cultivar because prices will drop. If I don't have the narrative, I won't be able to get that price, that price differential compared to a Spanish production – because I don't have the territory to compete!". (Gagliano del Capo, LE, 02/03/2021)

[12] http://www.infoxylella.it/xylor/.

[13] The full reportage, "The Ghosts of the Landscape", is available here: http://www.postphotography.eu/portfolio/photos/the-ghosts-of-the-landscape/.

[14] Exactly in the bodily sense Ingold means it: *kairos*, referring not only to the moment that must be seized but also to the attention and responsiveness necessary to be able to do so. It is a gesture that is foundational of genetic inheritance, and yet it is nothing less than a technique of the body (Mauss).

[15] Aesthetically, also the rythmanalytic present body of the Olive-Christ recalls the figure of the outlaw, the marginalized who has nothing to give.

[16] Dickinson, Emily (1996) *The Last Night That She Lived*, in "The Selected Poems of Emily Dickinson", New York, Modern Library, p. 207.

[17] They are professors and researchers in microbiology and agroecology at University of Palermo. The fields were Michele Russo's, one of the farmers participating to the Desert-Adapt project.

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