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DISCUSSION PIECE

Agroecology's moral vision

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Abstract
What is agroecology's moral vision, and what are the larger metaphysical, even theological, implications of it? Even though agroecology as a field now gathers collaborators from across the natural and social sciences, as well as members of farming communities and international movements, there remains relatively little explicit and sustained reflection upon this question. My main contention is that expanding agroecology's dialogue of wisdoms (*diálogo de saberes*) to include theological traditions can address this lacuna. To show how, I explore the contribution of one particular theological tradition—Catholic social teaching—and how its account of integral ecology enables agroecologists to deepen their engagement with fundamental questions raised by their own normative commitments.

Keywords Agroecology · Moral ecology · Catholic social teaching · Integral ecology · Pope Francis · *Laudato si'*

Introduction

What is agroecology's moral vision, and what are the larger metaphysical, even theological, implications of it? Agroecology is a transdisciplinary field that integrates the agronomic and ecological sciences, while also insisting that scientific tools alone are inadequate to the field's object of study: agriculture. This is fitting given that agriculture (from the Latin *ager* 'a field' and *cultura* 'cultivation') is a hybrid phenomenon that embodies both nature and culture (Descola [2005] 2013; Latour 1993). In contrast to modern industrial agriculture's reliance upon specialized agricultural science (Scott 1998; Henke 2008; Fitzgerald 2010), agroecology as a field grasps that the complex ecology of this hybrid phenomenon requires a more holistic approach, along with methodological and epistemological diversity. Agroecologists often use the phrase "dialogue of knowledges" or "wisdoms" (*diálogo de saberes*) to refer to the kind of horizontal encounters they envision among scientists, farmers, and movement activists, whose distinctive contributions are valued and incorporated into the field's ongoing development.

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Even though agroecology now gathers collaborators from across the natural and social sciences, as well as members of farming communities and international movements like *La Vía Campesina* (The Peasant Way), there remains relatively little explicit and sustained reflection upon agroecology's moral vision, a phrase I use to describe the field's underlying normative committments. To be clear, such commitments have been present from agroecology's beginning and have evolved over time. My contention, then, is that, apart from a number of important exceptions, agroecology's moral vision has remained relatively unexamined—left implicit rather than rendered explicit—and moreover, that the field would benefit from more sustained reflection upon it. Doing so would not only help agroecologists better clarify and defend their normative commitments but might also help them to discover allies in unexpected places.

An important instance of agroecology's moral vision is the field's characteristic appeal to principles. When first articulated by agroecologists, these principles mainly related to the "ecology" of specific production practices, such as closing resource cycles of nutrients and biomass; enhancing soil health and functioning through integrating organic matter and fostering biological activity; and incorporating agrobiodiversity into agroecosystems. Later in the twentieth century, agroecologists began to incorporate additional principles—often referred to as "socio-economic," "cultural," or "political" principles—that concerned issues like valuing the different kinds of knowledge involved in the dialogue of

wisdoms; advocacy for food sovereignty and social justice; and resistance to "an economic system that puts profit before life," in the words of the Declaration of the International Forum for Agroecology (Nyéléni 2015). As a consequence of this evolution, agroecology's articulation of principles sometimes seems to run on parallel moral tracks. While some principles pertain to agricultural production, others pertain to social-economic life, and there is often little or no discussion of their integration. It is a parallelism that risks reinscribing the same nature-culture dualism that agroecology elsewhere unsettles, effectively taking with one hand what the field gives with the other.

A good example of this tendency can be found in an otherwise excellent recent review of "human and social values" in agroecology. Because of the focus of much agroecological research on "the techno-scientific dimension" of agroecology, Rachel Bezner Kerr and her colleagues opt instead to examine "human and social values in agroecology, including … principles [like] *fairness, connectivity, social values, and diets*" (Kerr et al. 2022, emphasis in original). The authors' formulation suggests that principles in the techno-scientific dimension are not values—or at least not in the same way that human and social principles are. Otherwise, why separate the techno-scientific and use the language of value to describe the human and social alone?

If this is the authors' intended meaning, it raises a significant question: is not the techno-scientific dimension of agroecology also a matter of value? After all, this dimension similarly involves human beings and their agency. Additionally, it involves prioritization of an agriculture patterned upon ecology rather than upon industry. In other words, what the authors call the techno-scientific dimension is not a value-free zone but also unavoidedly implicates the issue of what we and our societies value—in the fullest sense. As philosopher of science Hugh Lacey has persuasively argued with respect to science more generally, "Values pervade, and must pervade, scientific practices and … account for the direction of inquiry and for the kinds of possibilities attempted to be encapsulated in theories" (Lacey 1999). Apart from the issue of how agroecologists understand value, does not the division between the techno-scientific and the human-social, once again, also simply reinscribe a nature-culture dualism that fails to do justice to agriculture as a hybrid phenomenon that cannot but integrate both?

In what follows, my guiding question is whether agroecology's existing normative commitments can be further clarified and better integrated into a more comprehensive moral framework, one that both reflects the nature-culture hybridity of agriculture and that conceptualizes ecology capaciously enough to include human creatures and what they value within it. I argue that a possible answer to this question is to consider expanding the agroecological dialogue of wisdoms to embrace theological traditions like Catholic social teaching. Indeed, I aim to show that social teaching's account of integral ecology—which is another name for an ecology that includes human creatures and their values—offers agroecologists one way to deepen engagement with the fundamental questions raised by their own normative commitments. For instance, social teaching can help agroecologists surface assumptions about values, about human creatures and their distinctive ecology, and about the bonds between ecological and social justice that agroecologists perceive but often leave largely undeveloped. Moreover, social teaching's account of integral ecology asks agroecologists to consider whether the integration of human creatures into their conception of ecology entails that the field be more receptive to spirituality and theology—an issue that some agroecologists have recently begun to acknowledge and address (Toledo 2022; Wright 2021). For from the vantage of Catholic social teaching, any ecology capable of remedying the damage we have done to the earth and to one another must expand to include not only human creatures but also what Pope Francis in his 2020 document *Querida Amazonia* (Latin for "beloved Amazon") calls "the first ecology that we need": God, who brings us and all creation into existence by love, and who teaches us to love our brothers and sisters and the wider creaturely world that God sustains in being.[1]

This article consists of three main parts. The first is largely historical, tracing the emergence of agroecology as a field from the twentieth century to the present, noting how and why it gradually expands beyond the agricultural and ecological sciences. The second part examines certain fundamental features of agroecology's moral vision, a vision that has developed and deepened over time by expanding and complexifying the category of ecology itself, especially as the field has included more fully the ecology of the human creature within its scope of reflection and practice. The third and final part turns to the contributions a theological tradition like Catholic social teaching can make to agroecology, especially how dialogue with social teaching's understanding of integral ecology offers one path toward further clarifying and developing agroecology's own moral vision.

The emergence and development of agroecology

Clarifying terms

It is now commonplace to characterize agroecology as a field that integrates the agricultural and ecological sciences,

[1] This and all other ecclesial documents cited can be found at www.vatican.va

farming practice, and the politics of agrarian movements (see Gliessman 2018; HLPE 2019). Because of this integration, there is some question about what kind of science it is. Widespread cultural presumptions that science is the pinnacle of rationality and that it is value-free contribute to the view that agroecology is unscientific because of its entanglements with practices and politics. Adding to the complexity, some agroecological scientists have critiqued the field's integration of science, practice, and politics for generating confusion. To avoid misunderstanding, these critics have argued that agroecologists should be more definitionally explicit, and that agroecology should fashion itself, first and foremost, as a scientific discipline, rather than as a practice or a politics as well (Wezel et al. 2009).

In what follows, I do not respond at length to the critique of agroecology as unscientific but simply note that it presumes a pristine agriculture science—as if any entanglement with practices, politics, and normativity contaminates. Relatedly, it is also important to ask whether this value-free ideal is itself defensible in its own right (Douglas 2009). Lacey, for instance, has argued that agroecology is not unique among the sciences in being caught up in "value complexes" (Lacey 1999, 2005, 2013, 2014a, b, c, 2015). Notice also that the critique of agroecology as unscientific treats the distinct forms of knowledge that agroecology integrates—science, practice, and politics—as mutually exclusive, when they are not. Consider Aristotle's distinctions between *epistēmē* (scientific knowledge that is universal, invariable, and context-independent), *technē* (knowledge that is pragmatic, variable, context-dependent, and tied broadly to crafts and technical knowledge that produce artifacts), and *phronesis* (practical wisdom related to deliberation about *praxis* or action, which is also pragmatic, variable, and context-dependent). As Emilio Travieso has persuasively argued, these forms of rationality roughly correspond to agroecology as a science, practice, and politics, respectively, and that each implies normative committments (Travieso 2015, 2018; see also Dunne 1997; Lacey 2015).

To get a better handle on agroecology's moral vision, I begin by surveying the field's development. Attending closely to agroecology's historical evolution can help us to clarify its rationale for seeking to integrate science, practice, and politics in the first place. Accordingly, in this first part, I will examine that evolution, sketching how and why, since it first began as a science in the 1930s, agroecology gradually expanded to include the insights of agricultural practitioners, and then, later, social movement organizations and activists. For part of what is at stake in this development and expansion, I argue, is the field's growing recognition of the hybrid character of agriculture itself, along with the complexity of the ecology with which agroecology grapples and that is at the heart of its moral vision.

Agroecological science

Agroecology first emerges toward the beginning of the twentieth century as a scientific discipline integrating agronomy and ecology (Hecht 1995; Francis et al. 2003; Gliessman 2007). Whereas agronomy began in the mid-nineteenth century primarily as an applied science that harnessed advances in soil chemistry and plant breeding to increase crop production for food and feed, ecology began later as a "pure" science, mostly focused upon relationships between living organisms and their environment rather than on human beings and practical applications. Throughout much of the twentieth century, agronomy and ecology existed as separate sciences and developed apart from one another (Gliessman 2007).

What led early agroecologists to integrate them? Early agroecological literature reveals that an important motivation came from resistance to the consequences of agricultural modernization and industrialization, a resistance in which we find the rudiments of agroecology's moral vision. Concerns surrounding such modernization and industrialization can be seen in the 1930 article in which the Russian agronomist Basil Bensin first coined the term "agroecology" to name a research program offering an alternative to the agricultural sciences of his day and their capture by industry.[2] Bensin critiques the lack of "scientific control over the sale or use on the farm of industrial products." Products are sold to farmers by large companies focused primarily upon profit rather than the wellbeing of farmers or farming communities. The products themselves are "universal types" meant for all farmers in all places, not for particular farmers in particular places. Companies give almost no attention to adapting technology to local ecology and conditions, resulting in ecological damage (Bensin 1930). Bensin is describing what David Goodman, Bernardo Sorj, and John Wilkinson will later call "appropriationism," which is a "discontinuous but persistent undermining of discrete elements of the agricultural production process, their transformation into industrial activities, and their re-incorporation into agriculture as inputs" (Goodman et al. 1987; see also van der Ploeg 2008).

For Bensin, agroecology integrates ecology into agronomy and considers agricultural land itself as a distinct kind of ecosystem—what he calls an 'agroecosystem'—as opposed to (solely) a site of extractive agricultural

[2] Bensin focuses upon three main areas: first, agricultural chemistry, which enabled the rise of the chemical fertilizer industry, especially nitrogen fertilizer; second, mechanical engineering and the breakthroughs in mechanization, with the increasing use of farm machinery like tractors, ploughs, harrows, and cultivators; and, third, plant genetics, plant breeding, and the production of improved seed varieties.

production. Bensin emphasizes agriculture's adaption to and reliance upon local ecology, studying "plants in their natural associations as they appear in definite geographical regions under varying conditions of climate and soil," in contrast to the universalizing and industrializing tendencies of mainstream agricultural science. Additionally, Bensin believes the realization of his agroecological program necessitates the development of new agricultural institutions that consider farmers' wellbeing and help them tailor technologies to "the special conditions of each country and each agricultural region" (Bensin 1930).

In Bensin, we encounter characteristic marks of the field of agroecology: a critique of industry's increasing capture of the agricultural sciences; a desire to understand and manage agricultural land not just as a site of extractive production but as a coupled social-ecological system; and a growing recognition of the need to account for the human creature's presence within the purview of agroecology. What is also clear is that, at least according to Bensin, agricultural research, whether agroecological or agro-industrial, is already inescapably and complexly entangled in moral questions. There is no value-free agricultural science.

During the middle decades of the twentieth century, there were other important scientific precursors to contemporary agroecological science (Azzi 1928; Friederichs 1930; Klages 1942; Tischler 1965). While not all used the precise term agroecology, they were all dedicated to, as the French agronomist S. Hénin put it, "apply[ing] ecology to plant production and agricultural land management" (Hénin 1967). By the 1960s, with greater public awareness of the "environmental crisis" and industrial agriculture's ecological damage, interest in agroecological science expanded and led to further developments. Rachel Carson's landmark *Silent Spring* (2002) documented the consequences of indiscriminate use of agricultural pesticides like DDT and critically examined mainstream agricultural science's "dominat[ion] by industry, in which the right to make a dollar at whatever cost is seldom challenged" (Carson [1962] 2002). Carson trained as a marine biologist, but her observation that "single-crop farming fails to take advantage of the principles by which nature works," along with her advocacy for an agriculture that maintained and enhanced agrobiodiversity and that worked with ecological processes like predator–prey dynamics, was essentially agroecological in orientation (Carson [1962] 2002).

Later in the twentieth century, Miguel Altieri, a pioneer and popularizer of agroecology, echoed Carson, defining agroecology as a discipline "that provides the basic ecological principles for how to study, design, and manage agroecosystems that are both productive and natural resource conserving, and are also culturally sensitive, socially just, and economically viable" (Altieri 1995). A more recent example of the kind of ecological principles Altieri mentions can be found in a report of the High-Level Panel of Experts (HLPE) on Food Security and Nutrition, the science-policy interface of the U.N.'s Committee on World Food Security. In the report, the authors articulate a number of principles for improving resource efficiency, such as relying upon local, renewable resources and closing nutrient and biomass cycles, as well as reducing or eliminating dependence upon purchased inputs. Additional principles aim to foster the resilience of agroecosystems by enhancing soil health and functioning through organic matter management, integrating livestock, maintaining and enhancing agrobiodiversity, and establishing beneficial synergisms (HLPE 2019; see also Wezel et al. 2020).

We will consider the significance of these and related principles at greater length below. At this juncture, it is sufficient to see that, in addition to their descriptive function, these principles also possess a clear normative valence, making it possible to discern the lineaments of agroecology's moral vision. Viewed in light of these principles, that vision is based in the belief that agriculture should be patterend on ecology rather than industry, and that doing so conduces to the flourishing of farmers, farming communities, and those who consume their products, as well as to the ecosystems that creaturely life depends upon.

Agroecological practice

During the twentieth century, another key development was agroecology's recognition that many smallholder agricultural systems throughout the world—systems managed by peasants, indigenous peoples, hunters and gatherers, family farmers, herders and pastoralists, and fisherfolk—continued to exist on the margins of modern industrial agriculture and already operated in accordance with ecological principles like those just articulated. The task of refashioning our agri-food systems therefore did not need to start from scratch but could begin by acknowledging, supporting, and strengthening these agricultural systems.

As delegates representing diverse organizations and movements of smallholder farmers at an agroecology forum in Nyéléni, Mali in 2015 declared, "Our ancestral production systems have been developed over millennia, and during the past thirty to forty years, this has come to be called agroecology" (Nyéléni 2015). The delegates are pointing to agroecological systems that are diverse and multifunctional, often integrating crop mixtures, trees, livestock, and fish. These systems tend to add substantial quantities of organic materials to soils and to employ effective methods for managing insect herbivores. Because they are based upon and work with ecological principles, such agricultural systems "drastically reduce our use of externally-purchased inputs that can be brought from industry." They are not a relic of the past but a living model of a possible agricultural future,

in contrast to the "corporate model" that "over-produces food that poisons us, destroys soil fertility, is responsible for the deforestation of rural areas, the contamination of water, the acidification of oceans, and the killing of fisheries" (Nyéléni 2015). These insights underscore an essential feature of agroecology: in the words of Susanna B. Hecht, "the science and practice of agroecology are as old as the origins of agriculture" (Hecht 1995).

A greater understanding of smallholder agricultural systems—especially indigenous ones—was therefore also central to the development of agroecology (Hecht 1995; Richards 1939; Conklin 1956; Brokenshaw et al. 1979; Bremen and DeWit 1983; Watts 1983; Denevan et al. 1984; Richards 1985). During the twentieth century, agroecological scientists increasingly began to study such systems and collaborate with smallholders (Altieri 1990; Toledo 1990; Sevilla Guzmán and Woodgate 2013; Lacey 2005). The goal was not to modernize backward forms of agriculture. Rather, it was to understand the ecological principles and processes underlying such systems, as well as the conditions enabling their existence.

An important assumption guiding these collaborations was that smallholder agricultural systems were worthy of attention, respect, and preservation in their own right. Another assumption was that the cultivation of fields (*agri*) cannot be separated from the culture (*cultura*) that supports and organizes such cultivation. Smallholder systems, like all agricultural systems, are the fruits of both nature and culture, the consequence of the coevolution between ecosystems and human communities—oftentimes over generations. Therefore, agricultural production practices cannot be separated from correlative forms of social life. Increased attention by agroecological scientists to smallholder agricultural systems and management practices only reinforced the scientists' sense of the inadequacy of an exclusive reliance upon scientific tools alone. A broader perspective was necessary.

Agroecological politics

A third major phase of agroecology's development began around the 1980s, when smallholders began organizing and developing regional and transnational networks in order to assert their dignity and their right to exist against new threats to both. The 2015 meeting in Nyéléni, Mali mentioned above was a fruit of this process. The formation of these networks in the first place was a consequence of the long legacy of exclusion and marginalization of smallholders in the face of dominant models of agricultural development and modernization, their resistance to being effectively discarded by their societies.

Under the neoliberal phase of capitalism, conditions for smallholders worsened (Doula 2000; Edelman 1998, 2001; Borras et al. 2008; Martínez-Torres and Rosset 2010). Neoliberalism included the radical downsizing of governments and elimination of minimal social supports, as well as the ongoing prioritization of export industrial agriculture, trade, low prices, and import dependence. The centerpiece of this neoliberal vision was private ownership of land, as well as the establishment of markets in which land could be bought and sold just like any other commodity. In response, a new agroecological politics began to develop, with smallholders organizing in self-defense against this assault upon their existence and dignity. In Latin America, they formed groups like the *Coordinadora Latinoamericana de Organizaciones del Campo* (Latin American Coordination of Rural Organizations, CLOC). Similar organizations emerged elsewhere. Such organizing laid the groundwork for *La Via Campesina*, which remains one of the world's largest transnational movements and represents millions of people (Borras 2004; Desmarais 2007; Martínez-Torres and Rosset 2010; Gaarde 2017).

As María Elena Martínez-Torres and Peter Rosset observe, the central demands knitting these networks together were "the right to land, the right of rural peoples to produce, and the right to continue to exist as such" (Martínez-Torres and Rosset 2010). These movements therefore exemplify what Anne Philipps calls the politics of the human—"the claim, *by those not yet recognized as such*, that they are of fully equal standing" (Philipps 2015, emphasis in original). "The human," Philipps states, "is about claiming our equality" (Philipps 2015) and struggling, as Estela Hernández, a Hñähñú woman from central Mexico put it, "*hasta que la dignidad se haga costumbre*" (until dignity becomes ordinary; see Cruz 2017).

Such demands and struggles are reflected in the Declaration of Quito (1990), which commemorates the quincentennial of the arrival of Columbus in the Americas. The moral vision of this transnational movement and its priority upon the ecological commons in the face of privatization can be seen in its insistence upon production "rooted in and ordered to the community." "We are not owners of nature," it states, before continuing:

> It's our mother, not a commodity; it's an integral part of our life; it's our past, present, and future. We believe this form of life is an option, an alternative, a light for all the peoples of the world oppressed by a system sustained by the domination of people and nations, and of nature; a system where the individual takes precedence, where the rights of peoples are declarations that do not cohere with actual practice; and where their rights to exist are definitively negated. (quoted in Martínez-Torres and Rosset 2010)

Notice the declaration's appeal to the foundational belief that the wider created order is not most fundamentally a commodity to be bought and sold, but a giver of life—like a

mother. In contrast to an extractive economy that prioritizes profit, the declaration dreams of one that prioritizes life.

The developments I have been tracing in this first part regarding field of agroecology are additive. As the science of agroecology learned to appreciate the importance of practice and politics, the integration of these distinct elements into its dialogue of wisdoms deepened and expanded the field's engagement with and understanding of its object of study. What has emerged as a result is a field whose politics, while certainly distinct from its science and its practice, are ultimately inseparable from them. The science, practice, and politics of agroecology are all integral to the agroecological dialogue of wisdoms, just as the science, practice, and politics of agroecology have all developed as a fruit of the dialogue. In recent years, as agroecology has grown in renown, some within the agricultural community have tried to deny its politics and its critique of imbalances of power in the agri-food system by seeking to restrict agroecology to its scientific elements or its production practices alone. But precisely on the basis of agroecology's integration of science, practice, and politics, agroecologists have vociferously resisted this "cooption," arguing that an agroecology severed from its politics is no longer properly agroecology at all (Nyéléni 2015; Altieri and Rosset 2017).

In short, agroecology is commonly understood today as a tripartite entity. It is a *science* that studies ecological principles and processes in relationship to agriculture and the agri-food system more generally. It is the actual *practice* of agriculture, that is, forms of farming that integrate into and work with ecological principles and processes rather than override them. Finally, it is a *politics* that resists the deleterious effects of modern industrial agriculture, advocating instead for the transformation of such systems and for farming communities to have access to land and other conditions necessary for their ongoing existence. Together, all of these elements contribute to agroecology's moral vision.

Agroecology's moral vision

Moral ecology

One way to describe the evolution we have been examining in the first part is as an expansion and complexification of the category of ecology itself. At first, this expansion and complexification involved the integration of traditional agronomy and ecology, and then later, integration of the practices of farmers and agrarian politics. My contention is that this evolution does not tarnish the epistemological purity of agroecological science. Rather, it reflects the field's growing recognition that its object of study spans the nature-culture dualism, and that it includes human creatures and their values. Even in our own day, the field continues to wrestle with how to conceptualize this complex, hybrid ecology.

Getting clearer about this complex, hybrid ecology is critical for approaching the issue of agroecology's moral vision—or what we might alternatively call its moral ecology. The phrase "moral ecology" has been employed by anthropologists like Michael Dove and Kristin Norget to render explicit the ecological relations and imperatives of sustainability that undergird and suffuse social and economic life (Dove 2011; Norget 2011). The phrase is therefore helpful for highlighting agroecology's awareness that agricultural systems are the products of both nature and culture; that reliance upon natural scientific tools alone is inadequate for understanding agriculture; and that as a result, the inclusion of human creatures is imperative. The more agroecology has methodologically integrated the human creature into its frame of vision, the more the field's operative account of ecology has had to expand beyond particular production practices—or even the farm- or ecosystem-scale—in order to embrace "the ecology of food systems," as Charles Francis and his colleagues have influentially argued (Francis et al. 2003). This expansion involves understanding people, their agency, and their values as integral to the ecology under consideration, along with recognition that all forms of land cultivation have a correlative culture.

Although this conception of ecology is at the heart of agroecology's moral vision, surprisingly little explicit attention has been devoted to it by agroecologists themselves. To be clear, agroecology as a field is pervaded by moral claims, along with important calls to enlarge and to deepen the dialogue of wisdoms. Two agroecological currents that are especially noteworthy are political agroecology and agroecological feminism. While the former insists upon the centrality of power and governance in shaping the agri-food system (González de Molina 2019; Anderson et al. 2021), the latter argues that feminist contributions are indispensable to agroecology's goal of transforming power relationships in the agri-food system (Morales 2021; Trevilla Espinal et al. 2021; Zaremba et al. 2021). When I contend that little explicit attention has been devoted to agroecology's moral vision, I by no means intend to neglect or discount these important contributions. Instead, I simply refer to the recognition by Charles Francis and his colleagues that what is at stake are not just *ethical issues*—such as power and representation—but also the importance of "*the field of ethics*" for developing a "*framework* that will guide research, education, and action" (Francis et al. 2003, emphasis mine).

As I have been suggesting, the very category of ecology that agroecology as a field presupposes implies a moral vision and points to the need to engage more substantively with ethics in the sense just specified. With political ecologists, we can recognize and examine the presence of ecological and political processes within agri-food systems, and

with feminist agroecologists we can interrogate the current configurations of the dialogue of wisdoms and its failure to reflect the immense contribution of women to feeding and sustaining the world. Nevertheless, questions remain about the moral valence of the very category of ecology that agroecology and its various currents presuppose and draw upon.

For instance, we have noted that agroecology began as a science critical of trends in the agricultural sciences, and that the basis of this criticism was the belief that industry, rather than ecology, was becoming the basis for agriculture. In this example, ecology not only describes the structure and functioning of ecosystems. It also functions normatively at least in two senses: critically, vis-à-vis industrial agriculture science as beholden to industry and also constructively, as an alternative, ecological basis for agriculture. But what precisely is the conception of ecology in view here? What is the source of this normativity that guides agroecological science but does not seem to derive from the science? More generally, what does agroecology's conception of ecology imply about who we are as humans, the world we inhabit, and the societies of which we are member—all of which are integrated into a complex whole? While agroecology as a field need not necessarily answer these questions—and if it did, the answers would certainly vary widely—such questions are raised by agroecology's own terms.

Agroecological principles

Perhaps the clearest example of agroecology's moral vision can be found in the ecological principles to which agroecologists characteristically appeal. While agroecologists rightly represent such principles as the integration of an ecological rationale into agriculture, they are mistaken when they claim that these principles exclusively derive from science. As we have seen, the conception of ecology the field presumes is more expansive.

Instead, it is more accurate to say that, in the environmental historian Donald Worster's words, agroecological principles are rooted in foundational beliefs like "nature is a whole greater than we can understand or manipulate or control" (Worster 1993)—or, to return to the langauge of Quito, we are not the owners of nature because it is our mother, not a commodity. Agroecologists approach the wider creaturely world as an order that sustains our lives and that consists of patterns and processes that we did not create, that have integrity, and that even convey a kind of wisdom from which we can learn and that ought to guide our use. However, just because agroecological principles do not derive from science does not mean they cannot cohere with science or even offer it orientation. Indeed, admitting such coherence and orientation are only problems for those committed to the value-free ideal of science. A crucial question for agroecologists is therefore whether or not to surface and reflect upon these underlying normative committments in a more explicit and sustained way. One advantage of doing so is that it presents an opportunity for agroecologists to clarify and defend these commitments, as well as to include additional forms of knowledge into agroecology's dialogue of wisdoms.

Over the course of its development, agroecology's enumeration of principles has expanded beyond those discussed above and now includes what are variously called "socio-economic," "cultural," or "political" principles. These other principles prioritize horizontal sharing of knowledge between those engaged in agroecological science, practice, and politics. They also include protection and fostering of agri-food systems rooted in culture, identity, and tradition; support for the livelihoods of smallholders through fair trade; mending links between producers and consumers through more just markets, shorter distribution networks, and re-embedding agriculture in local and regional economies; and encouraging organizations among food producers and consumers, as well as greater participation in decision-making (Nyéléni 2015; HLPE 2019; Wezel et al. 2020; Barrios et al. 2020). Such socio-economic, cultural, or political principles are closely tied to the notion of food sovereignty, which an earlier gathering in Nyéléni defines as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Nyéléni 2007). Food sovereignty prioritizes the people who produce, distribute, and consume food—rather than markets and corporations—along with their access to and management of land, waterways, seeds, livestock, and biodiversity.

In agroecological literature, such socio-economic, cultural, or political principles are usually listed side-by-side with the previously-mentioned ecological ones and then exposited without much further comment upon the delay in their articulation or the nature of their integration with one another. But to return to the question raised at the outset, what is the significance of agroecology's simultaneous appeal to specific agricultural production practices, as well as to justice and food sovereignty? Together, all these principles articulate normative committments that can guide our relationships to the wider creaturely world and to one another. The overarching moral vision they convey clearly strains the nature-culture dualism, reaching for a reality beyond it. Yet it is a moral vision that agroecologists often articulate in terms constrained by that very same dualism, such as in the division between ecological principles, on the one hand, and socio-economic, cultural, or political ones, on the other—as if important ecological goods were not implicated in our socio-economic/cultural/political forms, and as if important socio-economic/cultural/political goods were not implicated in the ecological principles and associated production practices. Can agroecology's existing moral commitments therefore be further clarified and better integrated

into a more comprehensive moral framework, one that is more reflective of the nature-culture hybridity of agriculture and the expansive and complex ecology that this hybridity entails?

Integral ecology

Catholic social teaching

So far, I have tried to suggest that while agroecology has a discernable moral vision, that vision has tended to receive relatively little explicit attention and sustained reflection within the field. One important exception is Omar Felipe Giraldo, whose work within political agroecology underscores agroecology's "profound ontological implications" and asks agroecologists to acknowledge the "spiritual transformations" required in order to understand ourselves as "beings that are interdependent, inter-related, and that belong to vital webs." Much like I am attempting to do here, Giraldo presses fundamental questions related to the ecology of human creatures. "The political ecology of agriculture," Giraldo argues, is a struggle "not just over agriculture's political instruments, but above all the ontological, epistemic, and ethical conditions that allow for the construction of territorialities composed of diverse croplands interwoven with community forests, mountains, and rivers … in opposition to agribusiness *latifundia* [Latin "large estates"] and their green deserts emptied of smallholder households" (Giraldo 2018). In short, Giraldo is calling upon agroecology to expand and complexify its understanding of ecology through the integration of explicitly philosophical, moral, and even theological reflection.

Other voices have sought to push the field in a similar direction. Those gathered in Nyéléni, for instance, emphasized the crucial importance of cosmovision—the way we see and interpret the world—contending that the core of theirs is "the necessary equilibrium between nature, the cosmos, and human beings. We recognize that as humans we are but a part of nature and the cosmos. We share a spiritual connection with our lands and with the web of life" (Nyéléni 2015). Notice the comprehensiveness of this vision of ecology, one that integrates humans, the natural world, and the cosmos into an interrelated whole. Likewise, Víctor Toledo has recently argued that agroecologists have neglected precisely this more comprehensive vision of ecology—what he describes as "the complex, integrating set of beliefs" and associated spirituality that is typical of traditional smallholder producers (Toledo 2022).

In this third and final part, I echo these voices by turning to a tradition that can help agroecology reflect further upon its moral vision: Catholic social teaching and its understanding of integral ecology. The social teaching of the Catholic Church is a tradition of engagement with social life, the modern form of which begins in the late nineteenth century in response to structural poverty, as well as struggles of resistance—what was at the time called "the social question" (Ryan and McGowan 1921; Moggach and Browne 2000).[3] Recent scholarship has interpreted the emergence of this tradition in relationship to enclosure movements in Europe and elsewhere, highlighting its critique of rural social injustice and advocacy for agrarian reform (Whelan 2020a). In what follows, I focus upon two interrelated aspects of social teaching's account of integral ecology. The first is how it radically expands the category of ecology to include the human creature's relationship with God. The second concerns how it offers a language to describe the bonds of justice that agroecology perceives, but leaves largely undeveloped, between our relationships to the wider created order and to one another.

To be clear, I do not mean to suggest that agroecology's moral vision is deficient or that agroecology must address its underexplored presuppositions in order to be viable as a field. Agroecology has clearly operated (and can continue to operate) without so doing. Rather, my purpose is fundamentally constructive and additive. I am simply trying to show how Catholic social teaching might contribute to agroecology's existing moral vision—the same one surfaced in the first two parts of this article—through other modes of engagement with its object of study, and moreover, that this kind of engagement can enrich the dialogue of wisdoms agroecology proposes. Nor am I contending that social teaching is the only way for agroecology to address such underexplored presuppositions. Other theological and non-theological traditions certainly offer additional possible pathways for such deeper exploration.

Regarding the kind of tradition Catholic social teaching is, it is also important to clarify that, as the martyred Salvadoran archbishop Óscar Romero insists, social teaching does not seek to "invade" other fields (Romero 2005). Instead, it is guided by respect for and deference to their integrity. Like agroecology, social teaching has been characterized by interdisciplinarity from the outset, consistently entering into dialogue with various disciplines and integrating their contributions (see, for example, the Pontifical Council for Justice and Peace 2004). For instance, social teaching has learned much from environmental movements, evidenced by the tradition's ecological turn in recent decades (Dorr 2012). Additionally, as I have argued elsewhere, Catholic social teaching

[3] For more on the history and development of Catholic social teaching as a tradition, see Calvez and Perrin 1961; Schuck 1991; Curran 2002; Himes 2018. It is important to point out that feminist scholars have long pushed back against sexism in the Christian tradition and in Catholic social teaching. See especially Daly 1986; Reuther 1993; Johnson 1992.

needs agroecology because social teaching lacks conceptual and practical tools to implement the ecological-agricultural ethic the tradition itself espouses (Whelan 2020b, 2021). In this regard, many Catholics, including those within traditional smallholder farming communities in Latin America and elsewhere (Hernández Castillo 2001; Travieso 2015, 2018; Toledo 2022), as well as within popular social movements like those gathered in Nyéléni (see Pope Francis 2014, 2015a, 2016), have already realized this and have embraced agroecology. For these reasons, Catholic social teaching is positioned to be a helpful partner in agroecology's dialogue of wisdoms, having much to learn, as well as to share.

An ecology capable of remedying the damage we've done

Pope Francis does not invent the notion of "integral ecology" (see Deane-Drummond 2016), but he develops it extensively in his 2015 encyclical on ecology, *Laudato si'* (Latin for "praise be to You"), which is addressed not just to Catholics but to all people of goodwill. He writes, in a passage worth quoting at length:

> Why should this document, addressed to all people of good will, include a chapter dealing with the convictions of believers? I am well aware that in the areas of politics and philosophy there are those who firmly reject the idea of a Creator, or consider it irrelevant, and consequently dismiss as irrational the rich contribution which religions can make towards an integral ecology and the full development of humanity. Others view religions simply as a subculture to be tolerated. Nonetheless, science and religion, with their distinctive approaches to understanding reality, can enter into an intense dialogue fruitful for both. Given the complexity of the ecological crisis and its multiple causes, we need to realize that the solutions will not emerge from just one way of interpreting and transforming reality. Respect must also be shown for the various cultural riches of different peoples, their art and poetry, their interior life and spirituality. *If we are truly concerned to develop an ecology capable of remedying the damage we have done, no branch of the sciences and no form of wisdom can be left out, and that includes religion and the language particular to it*. (Pope Francis 2015b, emphasis mine)

We have already seen how the science, practice, and politics of agroecology contribute to an ecology capable of remedying the damage our industrial agri-food system has done and continues to do. In this passage, Francis shows he is engaged in a fundamentally similar task, suggesting that theological traditions also have a contribution to make to the development of such an ecology. What, then, is that contribution?

One answer Catholic social teaching has given to that question relates to the expansion of ecology to include humankind's relationship to God. Francis describes this aspect of integral ecology in a crucial passage from which I have already quoted above in a 2020 document called *Querida Amazonia*:

> Setting others free from their forms of bondage surely involves caring for the environment and defending it, but, even more, helping the human heart to be open with trust to the God who not only has created all that exists, but has also given us himself in Jesus Christ. The Lord, who is the first to care for us, teaches us to care for our brothers and sisters and the environment which he [sic] daily gives us. This is the first ecology that we need. (Pope Francis 2020)

Querida Amazonia is Francis's response to a historic gathering focused on the pan-Amazon region and the interlocking crises it faces, including decimation of the indigenous peoples who inhabit it as well as deforestation, pollution, and environmental degradation (Lantigua 2020). In this passage, Francis articulates an understanding of ecology that, while certainly compatible with and capable of integrating agroecology's, also clearly expands it still further. The pope is gesturing toward a much more comprehensive account of ecology, similar to that of Quito, Nyéléni, Giraldo, and Toledo. The word "integral" is from the Latin *integralis* for "forming a whole," and the whole that Francis has in view includes three fundamental and interwoven relationships: with God, with other humans, and with the earth (see Pope Francis 2015b).

While integral ecology's integration of our relationships with the earth and with one another closely coheres with agroecology's understanding of ecology, Francis's account operates at an even more basic level, addressing questions like: Who are we? Why are we here on this earth? What is our purpose? What is our responsibility to the earth that sustains us and to all those creatures with whom we share this common home? Catholic social teaching's distinctive contribution to the ecology we need is to raise and respond to such questions. "Unless we struggle with these deeper issues," Francis remarks in *Laudato si'*, "I do not believe that our concern for ecology will produce significant results" (Pope Francis 2015b).

The ground of Francis's understanding of integral ecology is the doctrine of creation, the belief that God is the Creator of heaven and earth, and of all things visible and invisible. Because the central distinction on this view is between Creator and creation—and not between nature and culture—Francis claims that "when we speak of the 'environment,' what we really mean is a relationship existing

between nature and the society which lives in it." Consequently, he continues, "we are faced not with two separate crises, one environmental and the other social, but rather with one complex crisis which is both social and environmental" (Pope Francis 2015b). These observations, together with Francis's refrain throughout *Laudato si'* that "everything is connected," derive from the doctrine of creation and its Creator/creation distinction (Pope Francis 2015b). Most fundamentally, these are claims about the kinds of creatures we are and the creation we inhabit, the creaturely kinships binding us together, and how all of creation holds together in relationship to the God that sustains creation in being (Latour 2008). Francis is pointing to a creaturely whole that is more ontologically basic than categories like nature and culture that divide us from other creatures and that obscure the kinships and commonalities we share as humans with the wider creaturely world.

According to Francis, we therefore cannot understand the reality we face, much less develop an ecology capable of remedying the damage we have done, without also grappling with these foundational anthropological, cosmological, and theological-moral questions. We must reflect upon the kinds of creatures we are and the world we inhabit, as well as the relationship all of creation bears to God. Why? Because, according to Francis, the crises we face result from problematic answers to these questions, answers that are practically instantiated in our lives, as well as in the structures and institutions that govern our societies. For instance, as he observes at the outset of *Laudato si'*, quoting St. Francis's *Canticle of the Creatures*, we have forgotten that our bodies are of the earth—dust, air, and water—and that the earth not only sustains us but also "governs" us. By refusing this reality and instead acting as if human freedom set us over and against the wider creaturely world, we fail to grasp the kinds of creatures we are and the world we inhabit. The consequence is damage to the earth and one another (Pope Francis 2015b).

Acknowledgements of the God who creates and redeems, and who cares for us and teaches us to care for one another and other creatures, then, is the first ecology we need, according to Francis, because while we habitually act as the earth's lords and masters, "we are not God" (Pope Francis 2015b). Accordingly, the remedy for the damage that we have done and continue to do lies in an ecological conversion to these truths about ourselves and the world. In this regard, the doxologies that begin and end the encyclical are essential to its message about integral ecology and the expansive and complex whole that such ecology has in view (Pope Francis 2015b). In praising God, we find ourselves in right relationship with God, with ourselves and one another as creatures, and with the wider creation. We also acknowledge what Reinhard Hütter calls the "double gratuity" that characterizes our lives: first, the absolute gratuity of creation and its essential gift-character; and second, the grace that frees our hearts to trust in the God who creates us and who shares God's life with us in Christ (Hütter 2019).

As Francis sees it, relationship with God is therefore essential for habituating us into these truths. Learning that we are not the Creator teaches us the humility of what it means to be a creature. It also liberates us from our propensity to act as if we are gods—as if the world is simply a warehouse of extractable raw materials subordinate to human use—rather than a creaturely world imaging its Creator and given for the common use of all God's creatures.

The ecology of justice

As we have seen, Catholic social teaching expands the category of ecology to include our relationship to God, in addition to our relationships to the earth and to one another. According to Francis, acknowledgement that the earth is God's is necessary in order to reorient us to the kinds of creatures we are and the world we inhabit, as well as to teach us how to care for one another and for our common home. This relates to the second key contribution of integral ecology: it offers agroecology a compelling language to describe the bonds of justice between our relationships to the wider created order and to one another.

The belief that the earth is God's radically disrupts any claims of absolute ownership, relativizing the boundaries of property and nation. In other words, faith in a God "who alone creates and owns the world," Francis writes, humbles our attempts to act as the earth's lords and masters, to impose our "own laws and interests on reality" (Pope Francis 2015b). Faith in such a God should generate resistance to any attempt to regard other creatures solely as resources to be exploited rather than as creatures with inherent value, integrity, and their own relationship to God (Pope Francis 2015b), and it should also lead us to critique the inequalities whereby "some consider themselves more human than others, as if they had been born with greater rights" (Pope Francis 2015b). Here we see how integral ecology attunes us to a justice that bridges the nature-culture dualism and integrates our relationship with God, one another, and other creatures into a single whole.

Throughout *Laudato si'*, St. Francis of Assisi exemplifies this integral ecology, and the saint's life displays for the pope the "inseparable bond" between ecological and social justice (Pope Francis 2015b). For instance, the saint habitually referred to other creatures as "brother" and "sister"—a language of kinship that comes from the doctrine of creation and the ontological bond uniting all

creatures. Learning to speak this language therefore is not "naïve romanticism," according to the pope, because acknowledgement of our common creaturehood is a matter justice, that is, a matter of what other creatures deserve from us (Pope Francis 2015b).[4] Relatedly, St. Francis was also known for radical solidarity with the needy and socially excluded. The saint's "ethic of creation," as Franciscan scholar Michael Cusato characterizes it, not only led him to learn the language of kinship with other creatures. It also entailed that the needy and excluded should be able to use and enjoy the goods of creation in justice. As Cusato explains, "The fruitfulness of creation has been given to human beings as a great and abundant gift; and everyone who lives and breathes has a right to be sustained at the abundant Table of Creation. Everyone who is born into the world receives … an inheritance passed on from previous generations which should allow them to be sustained from creation's abundance" (Cusato 2015).

Integral ecology's account of a justice that spans both nature and culture can also be seen in Francis's articulation of the human vocation to "'till and keep' the garden of the world" (Pope Francis 2015b, quoting Genesis 2:15)—a vocation that reflects our responsibility for the home we share in common with all God's creatures. While "tilling," the pope writes, implies our dependence upon and use of the world, "keeping" implies caring for, protecting, and preserving what is used. It is a vocation that clearly resonates with agroecology. On this basis, Francis begins *Querida Amazonia* by critiquing an extractivism that tills without keeping, in which governments privatize land and water, giving free access to timber, mining, and oil projects (Pope Francis 2020). In contrast, the pope calls for alternative forms of land tenure, as well as sustainable herding, agriculture, and other forms of employment, all of which are marked by simultaneous tilling and keeping (Pope Francis 2020). For such alternatives to be possible, the wider creaturely world must be defended through laws and policies that curb extractivism, as well as by human creatures who willingly and courageously stand in the way of extractivism and who embody alternatives to it (Pope Francis 2020).

Of course, the vocation to till and keep also returns us once again to our relationship with God. As Francis explains, the conviction that "the earth is the Lord's" (Psalm 24:1; see Deuteronomy 10:14; Leviticus 25:23) should indelibly shape our manner of tilling and keeping, leading to acknowledgement of kinships and commonalities between human and non-human creatures, as well as to ways of life that recognize the earth's givenness by God as a common home for all creatures both now and in the future (Pope Francis 2015b). Another way to put the point is that belief that the earth is the Lord's and that it is meant to be shared should lead to a politics that prioritizes the access of all creatures to the gift of creation. Agriculturally, this entails forms of tilling that keep the earth rather than degrade it, as well as the imperative to share the gift of creation with others, especially with those presently excluded from enjoying it (Pope Francis 2015b). Accordingly, material goods belong to those who need them as a matter of justice because the gift belongs to all. Such belonging demands—to return to the language of Quito—access to land and conditions for livelihood, as well as ensuring the ability of smallholders to produce and to continue to exist (Pope Francis 2015b). Moreover, because God gives the gift to meet the needs, not only of the present time but also of times to come, the giving of the gift unfolds temporally. Our tilling and keeping cannot disregard those who will follow us and requires intergenerational solidarity as a matter of elemental justice (Pope Francis 2015b).

"A true ecological approach," Francis therefore categorically explains in *Laudato si'*, "*always* becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear *both the cry of the earth and the cry of the poor*" (Pope Francis 2015b, emphasis in original). The harm we have inflicted upon the earth by tilling without keeping—which has led the earth to cry out to us—cannot be separated from the cries resulting from the harm we have inflicted upon one another by excluding them from what God has given for common use. Thus, against those who construe ecology and economy oppositionally—whether by defending nature but ignoring inequality and poverty or by advocating for poverty reduction through extractivism and the pillaging of the wider creaturely world—integral ecology binds the two together, hearing one interrelated cry, whose common taproot is injustice. Put differently, just as injustice has an ecology that implicates our relationships both to nature and culture, so too does justice. Integral ecology is an understanding of ecology that is capacious enough to hold these cries together.

Conclusion

This article has examined agroecology's moral vision by recounting the emergence and development of agroecology as a field. I have argued that this development has entailed an expansion and complexification of the category of ecology, especially through the integration of human creatures and agency within it. The result is a moral vision that combines

[4] Such a language, Pope Francis observes, also helps us to appreciate how our words both describe and enact our relationship to the world, affecting our choices and shaping our behavior. If we do not speak the language of kinship, we might instead begin to speak the language of lords and masters. "We have only one heart," and so our relationships with what we love—God, other creatures, and one another—are inescapably interwoven (Pope Francis 2015b).

norms regarding specific agricultural production along with advocacy for justice and food sovereignty, but in ways that are sometimes unintegrated, underdeveloped, and constrained by the nature-culture binary. For that reason, I have argued that Catholic social teaching's account of integral ecology offers one way to help clarify and deepen these features of agroecology's moral vision, as well as to expand its conception of ecology even further: to include the God who cares for us, and who teaches us to care for one another as well as the world God gives in common. For this is also an ecology we need, a wisdom that can help us repair the damage we have done—and continue to do—to the world and to one another.

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