

‘whether ideas originating in the First World are fit for consumption in the Third World. Who will be the intermediaries, what distortions will take place in transit?’ Thirty-five years later, we can say that many such intermediaries have since emerged, among whom certainly the foremost is the author of *Ecological Economics*. He has interpreted Catalonia to Spain, Spain to Europe, Europe to North America, Latin America to India and India to Latin America, the Third World to the First World and vice versa. He has not been alone in this task, of course, but amongst all of us he has conveyed the most wisdom, as well as been responsible for the fewest distortions.

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Joan Martinez-Alier and the Crisis of Civilization, Knowledge, and the Human Species

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ONE. Time has passed. It has almost run out. We will soon be or not be assessed by historians of environmental and critical thinking. Of course, so long as humankind can transcend what is the second most dangerous phase in human history (paleontologists agree that the first phase occurred when *Homo sapiens* were reduced to a minimum and were trapped on the coast of South Africa due to a freezing climate). After all, our species is the only survivor of the ten species constituting our genus. Time has passed and what we have watched like a distant horror movie has drawn close without our even noticing. We are now enveloped in it. From mere fanatical movie spectators, over a few decades we have become actors and actresses in the drama. The crisis of the human species is above all a crisis of civilization. It is the crisis of a modern, industrial, capitalist, technocratic, patriarchal, and anti-ecological world. However, it is also a crisis of knowledge since we are experiencing an epistemological turning point. Western and Eurocentric thinking has been breaking apart, and the cracks have reached not only the defenders of the system but also its critics. This epistemological crisis, a profound reframing of science’s main theories and methods, constitutes an extensive scientific transformation in the sense set forth by Thomas Kuhn in his book *The Structure of Scientific Revolutions* (1996). This work is a reflection about the most important science written about in the twentieth century, with more than 110,000 citations (Google Scholar). For all of the aforementioned, we are experiencing the

dawning of a new scientific paradigm, a new way of looking at the world through a scientific lens. This requires adopting a holistic or comprehensive approach (which is interdisciplinary, multidisciplinary, transdisciplinary, etc.) that conducts analyses that conjoin social and natural phenomena. It is a question of substituting “normal science,” the science that was gradually imposed and duplicated to the point of leaving a fragmented vision of the world and an over-specialized and alienated science. Today, we are facing the challenge of offering relevant and above all viable analyses in order to overcome the crisis confronting the human species (see González-Márquez & Toledo, 2020). Authors such as Fritjof Capra (*The Turning Point*), Edgar Morin (complex thought), Arthur Koestler (*The Ghost in the Machine*), Silvio Funtowicz and Jerome Ravetz (post-normal science), Enrique Leff (environmental epistemology), and others have contributed to this analysis. Besides, this deep epistemological transformation has made way for a set of what I refer to as “hybrid disciplines,” which are reactions to or attempts that emerge from the main fields of social science in order to explore their own objects of study in relation to ecological or natural processes (Fig. 1). Lastly, there exist hundreds of often weak or even naïve proposals to construct a general theory for the study of society and nature. To my way of thinking, only two merit inclusion: the Theory of Socio-Ecological Resilience and the Theory of Social Metabolism.

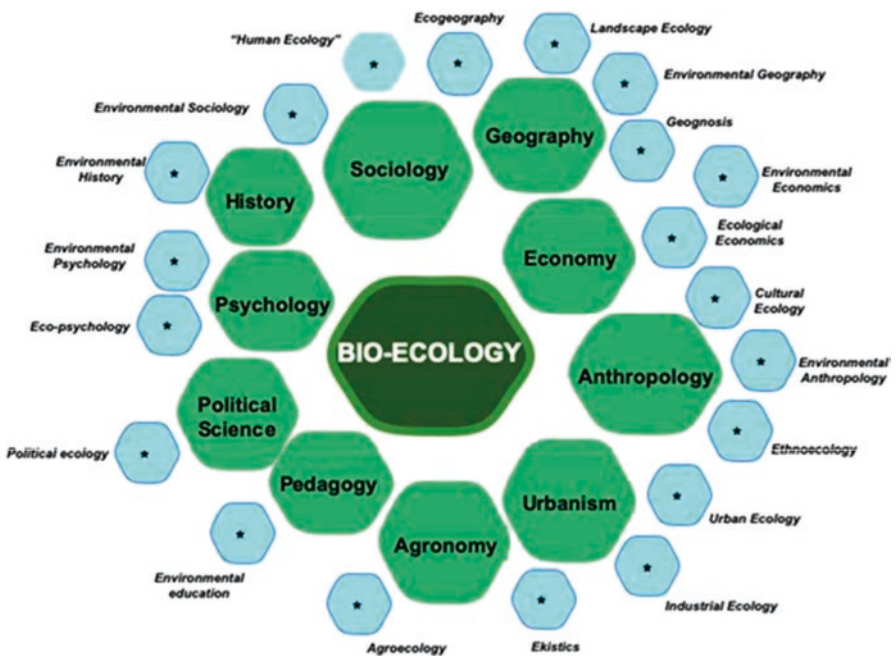


Fig. 1 Hybrid disciplines. During recent decades, we have noted the emergence of twenty new fields of study that seek to integrate ecological principles to a particular social or applied science. In many cases, there are many more papers, books, congresses, societies, and university courses and degrees emerging from hybrid disciplines than from the “mother disciplines.” (Source: González-Márquez & Toledo, 2020)

To the former, another unimaginable innovation should be added – the recognition and acceptance of the existence of other forms of non-scientific knowledge of a pre-modern origin, which Claude Lévi-Strauss (1966) called the “science of the concrete” (Paleolithic and Neolithic), which today survives among 7000 indigenous peoples worldwide. If science has existed for some 300 years, as revealed by key milestones such as the foundation of the Royal Society in England, in 1662, and the French Royal Academy of Sciences, in 1666, what has been dubbed traditional ecological knowledge (TEK) has existed since the origin of the human species around 300,000 years ago. This has given way to another hybrid discipline, a new field of study, Ethnoecology (Toledo, 2013; Toledo & Barrera-Bassols, 2008) which has elicited what is referred to as a “dialogue of forms of knowledge” between scientists and members of local communities – an intercultural dialogue.

TWO. In this context, briefly described above, Joan Martínez-Alier and a whole generation of critical and radical thinkers have generated ideas. We are a diverse and heterogeneous generation that embraces concepts such as de-colonization, sustainability, degrowth, post-development, and post-modernity, among others. Given his prolific innovative ideas, the enormous number of students, collaborators, and colleagues with whom he has interacted, and the projects he has spawned (journals, scientific societies and observatories, as well as databases), Martínez-Alier has become an extraordinary figure within this symphony of radical voices. To the above, should be added an unusual characteristic for European authors, who are normally self-absorbed. Martínez-Alier has travelled more than an airplane pilot, visiting almost all the Latin American countries and various regions of India, besides his own European continent. Officially educated in Economic History, he is known to transgress the split of knowledge into fields of study, which places him as the undisputed founder of two hybrid disciplines: ecological economics and political ecology. Since it would not only be senseless but also impossible to fully survey Martínez-Alier’s vast work, I will focus on four themes emerging from my knowledge about the academic career of Joan, who I met by the first time during the First Conference of the International Society for Ecological Economics (ISEE) in 1990, in Washington, DC. In spite of not having coauthored a single article, chapter, or book with Joan, nor belonging to the Barcelona School, my writings spring from a certain “natural attunement” of our visions, which have become enhanced throughout three decades, a period in which we have participated together in courses, conferences, congresses, and travels, and of course, my intellectual, fraternal, and family-like relationship with him.

THREE. I discovered Spain in 1992, when I attended three unorthodox academic events and met Eduardo Sevilla (from Córdoba), Manuel González de Molina (from Granada) and Joan Martínez Alier (from Barcelona), with whom I have frequently exchanged ideas throughout my scientific trajectory. They are my three main Iberian *interlocutors*. Together with them and several other close Latin American and Spanish colleagues, we have constructed alternatives to the civilization crisis in at least four hybrid disciplines: agroecology, political ecology, ecological economics, and environmental history. With them, I found an academic attunement that enabled me to overcome intellectual solitude. They were not only perceiving the world

through a lens that articulated ecology and Marxism, but also from an agrarian perspective in which the core stakeholders are the peasants of the world. That date coincided with the launching of a journal entitled *Ecología Política* (*Political Ecology*) in Barcelona, in 1991, created by Martínez-Alier. I had the honor to open the first issue with an article about Mexican peasantry. This journal has published 60 issues so far and has been joined by other similar journals in the United Kingdom (*The Ecologist*), the USA (*Capitalism, Nature, Socialism*), France (*Écologie Politique*), Italy (*Capitalismo, Natura, Socialismo*), Greece (*Society and Nature*), and India (*Down to Earth*). Joan enthusiastically promoted the interchange of essays between these journals, which came to form a kind of editorial consortium. *Ecología Política* has been a decisive publication that has stimulated and influenced thousands of scholars, activists, and social organizations in the Spanish-speaking world.

FOUR. Another of Martínez-Alier's contributions is his pioneering role in the theoretical construction and application of the idea of *Social Metabolism* (see Martínez-Alier, 2004, 2009). All hybrid disciplines point to the need to formulate a general theory conjoining society and nature. So far, social metabolism has been the most promising theory. The origin of this concept dates to the nineteenth century and relates to none other than Darwin and Marx. The nineteenth century was the era of the British Empire and London was not only the largest city in the world (with a population of 6.7 million inhabitants), but also the world capital of finances, commerce, politics, and intellectual creation. Numerous scholars and researchers from the most advanced intellectual circles of that time lived in London, including two giants of thought: Charles Darwin (1809–1892) and Karl Marx (1818–1883). Darwin established his home in a town near London in 1842 after returning from his exploration voyage to the southern hemisphere. Marx arrived in London 7 years later as part of his journey through several European cities. He remained there until his death. Although they lived within sixteen miles of each other, Darwin and Marx never met in person. Their contact was limited to correspondence initiated by Marx, who so admired Darwin's work that he felt inclined to dedicate the second volume of *Capital: A Critique of Political Economy* to him. Both Marx and Engels acquired and immediately read Darwin's *On the Origin of Species*, published in November, 1859.

Marx had not only extensively read the works of naturalists of his time, but he had also perused the work of a key author from the Netherlands, Jacob Moleschott (1822–1893), who was widely recognized in the European natural science circles and wrote *Der Kreislauf des Leben* (*The Circuit of Life*). From this work, Marx derived the key concept that allowed him to build his critical theory of capitalism: *Stoffwechsel*, translated as metabolism or organic exchange.

The concept of social metabolism remained virtually dormant during decades until Marina Fisher-Kowalski formally relaunched the concept in a chapter of the book *Handbook of Environmental Sociology* published in 1997 presenting it as a conceptual star that serves to analyze energy and material flows. Another two precursors were Alfred Schmidt and his "The Concept of Nature in Marx" (1971), the English version of which I came across in a book store at Harvard University in 1973. Undoubtedly, it was Joan who promoted the study of social metabolism, in

Barcelona, and who paved the way for three clearly defined tendencies: that which he promoted in several Latin American countries through various theses on the interchange of energy and materials; that which Mario Giampietro led and developed; and that which was developed by economists and geographers from Catalonia through the spatial studies led by Enric Tello, Joan Marull, and other authors.

Over the last decades, the concept of social metabolism has gained prestige as a theoretical instrument for required analyses, to such an extent that there are now dozens of researchers, thousands of articles, and several books that have adopted and used this concept. However, there is a wide variety of definitions and interpretations, as well as different methodologies surrounding this concept, which hinders the consolidation of a unified field of new knowledge. In *The Social Metabolism* (2014) coauthored by M. González de Molina and I, we have attempted to provide a theory of social metabolism that actually takes up the socio-ecological character of this concept in its full complexity. The theoretical and methodological innovations of this work include: (a) the rigorous definition of a basic model for the process of social metabolism and its components (beyond the “black box”); (b) the distinction of two main types of metabolic processes: tangible and intangible; (c) a detailed discussion regarding the concept of nature appropriation; (d) an analysis of social metabolism at different scales (spatial dimension); (e) a historical analysis of social metabolism (temporal dimension and socio-ecological change); (f) overcoming the merely “systemic” or “cybernetic” nature of approaches; (g) providing agency and visibility to collective action, as well as to the consequences and explanations of the above; and (h) integration of an ethical and political dimension into this theory.

FIVE. *The Environmentalism of the Poor* (2004), published in English, Spanish, and Portuguese, is Martínez-Alier’s most widely consulted and cited work. Environmentalism emerged half a century ago in the central and most industrialized countries (Europe, the USA, Japan, and others) and emphasized on urban and industrial problems regarding waste and residues. Antinuclear struggles, which were unable to stop the proliferation of the energy industry, characterized this first stage of world environmentalism. Nevertheless, the expansion of extractive activities unleashed an ever-increasing number of environmental conflicts in rural areas throughout the world to such an extent that in a few decades the center of environmental injustice spread to rural regions of the peripheral countries. The expansion of agricultural monocropping and cattle-raising, the over-exploitation of forests and fishing, mining, the extraction of fossil fuels, dam-building, the multiplication of tourist hubs, expansion of highways, and more recently the new wind and solar energy projects gave way to innumerable conflicts. These conflicts were raised among local populations (communities, municipalities, and regions) forced to defend their territories from attacks by private and government projects of all kinds. The environmental struggle spread, therefore, to marginalized sectors in rural areas: small-scale farmers, fishermen, shepherds, indigenous and Afro-descendant peoples, seasonal workers, and foragers. Joan’s book focuses on characterizing this second type of environmentalism. He was ahead of what today represents the main socio-environmental battles worldwide. It should be noted that two decades later,

this theoretical work was followed by a pioneering cyber project: *The Global Atlas of Environmental Justice* (EJAtlas) devoted to documenting socio-environmental conflicts throughout the world. Making these events visible to the public worldwide has been an indisputable achievement. The EJAtlas that today records almost 3500 conflicts constitutes an extremely valuable instrument of analysis and condemnation (including the filing of lawsuits). Its example has been duplicated on a national scale in countries like Mexico, and there exists a Latin American Observatory of Environmental Conflicts (<http://www.olca.cl>).

SIX. I conclude this brief review by resorting to three enduring personal and family reminiscences. The first is when, in 1996, he invited my family to his home in Barcelona, during a 6-month stay there. He prepared a strange and delicious *quinoa paella*, and our respective wives began an ongoing deep friendship, which exists until today. The second memory is the “anti-wedding” they held when Joan and Marta were obliged to marry by the United States government in order to be able to conduct research at Yale University, a most enjoyable but bizarre event. The third was a trip taken by our families in Mexico, from Xalapa to Oaxaca and from there to Morelia. The van we used unbelievably was able to transport the eight of us, our respective baggage and myriad cooking utensils, table games, and bedding. These are life-celebrating memories.

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References

- Fischer-Kowalski, M. (1997). Society's metabolism: On the childhood and adolescence of a rising conceptual star. In M. Redclift & G. Woodgate (Eds.), *The international handbook of environmental sociology* (pp. 119–137). Edward Elgar.
- González-Márquez, I., & Toledo, V. M. (2020). Sustainability science: A paradigm in crisis? *Sustainability*, 12, 2802. <https://doi.org/10.3390/su12072802>
- González de Molina, M., & Toledo, V. M. (2014). *The social metabolism*. Springer. 355 pp.
- Kuhn, T. S. (1996). *The structure of scientific revolutions*. The University of Chicago Press.
- Levi-Strauss, C. (1966). *The savage mind*. The University of Chicago Press. 310 pp.
- Martínez-Alier, J. (2004). Marx, energy and social metabolism. *Encyclopedia of Energy*, 3, 825–834.
- Martínez-Alier, J. (2009). Social metabolism, ecological distribution conflicts and languages of valuation. *Capitalism Nature Socialism*, 20(1), 58–87.
- Schmidt, A. (2014). *The concept of nature in Marx*. New Left Books-Verso.
- Toledo, V. M. (2013). Indigenous peoples and biodiversity. In S. A. Levin (Ed.), *Encyclopedia of biodiversity* (2nd ed., pp. 269–278). Elsevier.
- Toledo, V. M., & Barrera-Bassols, N. (2008). *La Memoria biocultural*. Icaria Editorial.