



Methodological and Ideological Options

To value or not to value? That is not the question

Giorgos Kallis^{a,*}, Erik Gómez-Baggethun^b, Christos Zografos^b^a ICREA and ICTA (Institute of Environmental Science and Technology), Universitat Autònoma de Barcelona, Spain^b ICTA, Universitat Autònoma de Barcelona, Spain

ARTICLE INFO

Article history:

Received 26 October 2012

Received in revised form 16 May 2013

Accepted 2 July 2013

Available online 15 August 2013

Keywords:

Commodification

Monetary valuation

Market-based instruments

Power

Political ecology

ABSTRACT

Should we reject money when we value nature? Like most environmentalists, ecological economists are increasingly divided on this question. Synthesizing political ecology with ecological economics, we argue that this way of framing the question is limited. We propose a reformulation of the question into “when and how to value with money?” and “under what conditions?” We recommend four criteria for a sound choice: environmental improvement; distributive justice and equality; maintenance of plural value-articulating institutions; and, confronting commodification under neo-liberalism. We call for due attention to the socio-political context within which a valuation is placed and the political goals it serves. The relevance of this framework is demonstrated by applying it to three practical cases: pollution damages, water pricing and payments for ecosystem services.

© 2013 Elsevier B.V. All rights reserved.

“At this point, the critic of money valuations, who is nevertheless deeply concerned about environmental degradation, is faced with a dilemma: eschew the language of daily economic practice and political power and speak in the wilderness, or articulate deeply-held nonmonetizable values in a language (i.e. that of money) believed to be inappropriate and fundamentally alien.”

[Harvey (1996, p. 156)]

1. Introduction

Many environmentalists, including ourselves, are often caught in the uncomfortable dilemma elucidated by Harvey. Costanza et al.'s (1997) study on the monetary value of the world's ecosystems divided ecological economists among those who accepted valuing nature in monetary terms as a pragmatic choice, and those who rejected it on methodological and ethical grounds (e.g. Spash, 2008). A related schism has emerged within the environmental movement. While some NGOs discuss full-cost pricing in the World Water Forum or carbon trading in the Climate Summits, others are organizing alternative forums outside, with slogans such as “water is not a commodity” (alternatifuorum.org) or “our climate is not for sale” (climateassembly.wordpress.com).

Should we value nature with money or not? Revisiting this controversial question is the overarching objective of this article. Drawing insights from ecological economics (EE) and political ecology (PE) we

aspire to offer guidance to environmentalists and ecological economists on when and how to engage with monetary valuation. PE is a field with roots in geography, anthropology and rural sociology. Like EE, PE also aspires to “combine the concerns of ecology and a broadly defined political economy” (Blaikie and Brookfield, 1987, 17). However, PE is much more influenced by the Marxist and egalitarian tradition of political economy. Nature-society relationships are examined through an analysis of social forms of access and control over resources and ecosystems (Watts and Peet, 2004). We are not the first ones who nurture insights from both EE and PE (e.g. Gómez-Baggethun and Ruiz-Pérez, 2011; Kosoy and Corbera, 2010; M'Gonigle, 1999; Martínez-Alier, 2002; Martínez-Alier and O'Connor, 2002; Vatn, 2000). But, to our knowledge, we are the first ones to examine the implications for EE of the expanding PE literature on the commodification of nature (but see also Rodríguez-Labajos and Martínez-Alier, 2012).

Some terminological clarification here will help. We will refer to the classical economics distinction between use value, the value we give to goods for their usefulness, and exchange value, the money potential of goods through market exchange. By monetary valuation we refer to those processes and tools through which money (exchange) values can be derived for non-market goods and services. A commodity is defined as a good or service exchanged in a market. By commodification we refer to the institutional, symbolic and material changes through which a good or service that was not previously meant for sale enters the sphere of market exchange (Bakker, 2005). To give an example: the Costanza et al. (1997) study and attempts to give prices to ecosystem services with contingent valuation represent instances of monetary valuation. The institutional establishment of wetland banks where wetland services are exchanged is a case of commodification (Robertson,

* Corresponding author.

E-mail address: giorgoskallis@gmail.com (G. Kallis).

2000) as is the case of biodiversity offsets. Valuation may be a necessary step in a commodification process, e.g. when values have to be assigned to ecosystem services in order to exchange wetlands. Conversely, it may be its end outcome, e.g. when a CO₂ market value is the result of the institutionalization of a process of emission permit exchange.

The paper proceeds as follows. Section 2 outlines the main contribution of PE to EE understandings of the monetary valuation process. We find that PE allows a better understanding of the monetary valuation process as part of a broader process of commodification, and in turn of commodification as part of the broader process of capitalist expansion into new social and environmental domains (Harvey, 2007; Polanyi, 1944). This facilitates a more politically aware stance on when to engage with valuation and when not. Section 3 offers some normative principles for those environmentalists and ecological economists who may share our values. The framework provided here is complementary to philosophical explorations seeking the normative basis for compensation under conditions of constitutive incommensurability (O'Neill, 2001). Section 4 gives three concrete examples (pollution damages, water prices and ecosystem services) to illustrate how these guiding principles may inform choice in practical situations. Section 5 concludes.

2. Political Ecology, Ecological Economics and Monetary Valuation

2.1. Ecological Economics

Ecological economists have criticized the fundamental limitations of monetary valuation of nature. This is probably well-covered ground for the readers of this journal and codified here into four main theses that are useful for the rest of the paper (our intention is not to reopen the discussion of whether this critique is right or wrong; we start here from the premise that it is right).

First, because ecosystems are highly complex and interconnected, their value cannot be compressed in a simple metric (Gómez-Baggethun and Ruiz-Pérez, 2011; Vatn and Bromley, 1994), or broken in individual monetizable parts, such as the value of a single species or area (Martín-López et al., 2008; Rodríguez et al., 2006). There are critical species and systems that escape human attention and may be undervalued or not valued at all (Vatn and Bromley, 1994), and independently of what humans may or may not value there are species or resources without which ecosystems cannot be sustained and for which there are no adequate substitutes or equivalents.

Second, there are multiple values and relevant languages of valuation other than those expressed in monetary terms. This is because there are multiple rationalities other than utilitarianism – such as consequential, rights-based, and procedural rationalities – through which humans choose courses of action (Martinez-Alier et al., 1998; O'Neill, 2001; Spash and Hanley, 1995). Such values are incommensurable, yet weakly comparable with one another (Martinez-Alier et al., 1998; O'Neill, 2001).

Third, there is no unique value for environmental goods and services independent of the distributional and institutional settings within which such values are expressed (Martinez-Alier and O'Connor, 2002). Initial entitlements matter, such as whether one has the right to pollute against payments, or be compensated for environmental damage. Each leads to very different valuations and outcomes (Vatn and Bromley, 1994).

Fourth, social processes of valuation, including monetary valuation, are value articulating institutions (VAIs) (Jacobs, 1997). These are frames invoked in the process of expressing values that regulate and influence which values come forward, which are excluded, and what sort of conclusions can be reached (Vatn, 2005). People exhibit different preferences depending on the socio-institutional environment in which they express them. Different values will be favored in a market than in a church.

Based on these four theses, ecological economists make an ethical and epistemological plea for plural values and plural VAIs. They complement this with a constructive methodological and political project of developing new VAIs with increased potential to accommodate

motivational plurality. New methods include social multi-criteria analysis (De Marchi et al., 2000; Gamboa and Munda, 2007), or deliberative valuation (Howarth and Wilson, 2006) and decision-making forums (Zografos and Howarth, 2008). Such processes however are still socially marginal, other than in experimental research domains. Monetary valuation on the other hand expands its domain and becomes the dominant language through which values about ecosystems and other components of the natural environment are being expressed. Facing Harvey's dilemma and the danger to become irrelevant, some ecological economists end up participating in the dominant institutional processes of monetary valuation with the hope that different values will be treated on equal grounds, but often these end up dominated by the cost-benefit logic and monetary values.

How can political ecology help critical EE out of this dead-end? First, let us present the key relevant ideas of PE.

2.2. Political Ecology

PE starts from a very different vantage point than EE. The focus is not on particular methods or practices of valuation. It is on understanding how capitalism works, how it affects human and non-human nature relationships, and why and how under capitalism there is a drive to reduce all forms of value and valuation into monetary (exchange) values. Starting from Marx's labor theory of value, a key insight concerns the inherent drive of capitalism to expand and reach limits and contradictions. These are – temporarily or spatially – surpassed through inventing new outlets for accumulation (Harvey, 2006). Crucially, this often takes the form of making new commodities through which capital can be circulated, out of things and relations that were previously subject to different logics (e.g. caring or ecosystem functions). Expanding commodification therefore is a structural tendency of capitalism since this way capital overcomes (temporarily) its crises.

While commodities are universal to all societies, “what distinguishes capitalist commodification is the general and expanding character of commodity production and circulation by capitalists who deploy wage labor in doing so” (Prudham, 2007, p.412). Commodities, markets and money existed also in pre-capitalist societies. However it is only societies organized around wage labor on the one hand and capital-holders on the other, that tend to reduce “the value of all things, people and social relations into money” (Douai, 2009).¹

A key concept here is “accumulation by dispossession” (Harvey, 2007, building on Marx). This refers to primitive accumulation ex-novo. Primitive accumulation was the original separation with “extra-economic” means (laws, violence and forced expropriation) of producers from their means of subsistence, such as in the pasture and game enclosures of 16th–19th century in Europe. Harvey among many others (e.g. Federici, 2004) has argued that primitive accumulation is not something that happened once in the origins of capitalism and is now over. It is an essential mechanism through which new outlets for accumulation are constantly created, especially when accumulation is in crisis. Privatization of public services (such as water, energy or transport), ecosystem services, intellectual patents in genes and life-forms, land-grabs and privatization of parks or beaches, the trimming down and privatization of social security and health-care are all instances of such “accumulation by dispossession”. Like in the original enclosures, people have their collective control over common resources reduced, and need to sell

¹ In Marx's theory the proposition that capital has to constantly expand through accumulation is derived by the foundational distinctions between exchange and use values, and between capitalists who own the means of production and wage labor that has to sell itself in a market in order to subsist and reproduce. The precise ways in which these relations generate the quest for constant accumulation are beyond the scope of this paper. The interested reader should consult Harvey (2007).

more of their personal time as wage-labor in order to provide for themselves.

Commodification is a relational moment in processes of accumulation by dispossession. Privatization, enclosure and the institution of private property rights, is another important moment (Prudham, 2007). Enclosures and dispossessions have been accentuated under neo-liberalism, the historical phase of capitalism starting in the early 1980s, which responded to the accumulation crisis of the Keynesian/Fordist model by instituting reforms that aimed to roll back the State, reduce taxes, and welfare expenditures and expand private property and market exchange to new realms (McCarthy and Prudham, 2004). This has resemblances to the liberal phase that preceded the Great Depression (Polanyi, 1944). Under neo-liberalism the commodification of ecosystem services, a primary interest of ecological economics, is part of the same process that brought the financialization of the economy, with the explosion of unregulated financial products.

Monetary valuation in turn is a relational moment in processes of commodification (see Bakker, 2005 for water supply, Robertson, 2000 for wetlands, and Gómez-Baggethun and Ruiz-Pérez, 2011 for ecosystem services). Assigning a monetary value to an ecosystem feature is necessary if it is to be exchangeable and tradable. But commodification is not just about setting up new institutions that render certain things tradable commodities. It involves a range of complex cognitive, analytical, discursive, political, institutional, and material devices reshaping human-nature relations. These range, for example, from laws and treaties defining water as an economic good to contested scientific methods for categorizing and valuing water flows and rights (Bakker, 2005). PE has paid analytical attention to the shifts in discourses and representation, necessary for rendering apparently 'natural' the internalization into capital of previously uncommodified aspects of nature and society (Escobar, 1996). Robertson (2000) refers to the heavy "discursive lifting" required for the individuation and abstractness of genes, organisms or environments (also Prudham, 2007). Monetary valuation techniques, such as willingness to pay or travel-cost or even more innocent concepts such as ecosystem "services", natural "capital" and the like, are not neutral categories. They frame the society-nature relationship into one of utility and exchange prefiguring commodification as a reasonable response.

Political ecology pays attention to how human agents intervene, resist and reshape the inherent drive of capitalism to expand. Labor and nature are not abstract categories, which are destined to be commodified and exploited. They are active agents that influence the conditions of their own reproduction (Castoriadis, 1965). People often stop enclosures or recreate new commons. Ecosystems in turn have biophysical properties that render difficult their commodification. The limits and consequences of the commodification of "fictitious commodities", i.e. elements such as labor and land that have not been produced for sale, generate counter-movements, which resist and reshape outcomes (Polanyi, 1944). Commodification is by its nature an incomplete and contested process, involving extra-economic means and struggles in streets, courts, polls, labs or scientific journals (Prudham, 2007). Nature is in fact often "uncooperative" to commodification (Bakker, 2003). For example, the fluidity, continuity and temporal variability of water or the spatial and functional differences of wetlands defy separation into measurable, tradable and exchangeable entities (Bakker, 2003; Robertson, 2000; Salzman and Ruhl, 2001). Such limits and contradictions, which are well revealed by the methodological work of ecological economists, offer opportunities for social struggles and for changing the course of institutional change; such as for example is the case with the re-regulation of the water industry following the commodification and privatization of water in England (Bakker, 2005). Counter-movements might even take the form of creating new commons, such as for example the evolution of the struggle against water privatization into constructive proposals in favor of municipal water cooperatives.

2.3. The Contribution of Political Ecology

The argument here is not that ecological economists should endorse a Marxist (labor) theory of value, a discussion that would push us beyond the scope of this paper.² It is that the critique of monetary valuation by EE can be fundamentally enriched if framed within the broader historic processes of commodification and accumulation by dispossession. Compared to PE, EE is moot on the socio-political forces driving the proliferation and expansion of monetary valuation in the environmental domain. EE sees valuation from the methodological angle of the practitioner-economist. Generally, it does not attempt to offer a comprehensive explanation for the expansion of monetary valuation and market environmental policies. The closer EE comes to such a proposition is with the thesis of "economism" (Norgaard, 2009), which refers to the intellectual hegemony of the neo-classical, free-market paradigm in economics and the rising influence of economists on public policy and environmental thinking. But EE does not explain how economism came to dominate. Economism is not theorized as part of historical processes of social and economic change. Instead, and following Polanyi (1944), PE offers a broader picture of the forces behind economism and commodification: these are part and parcel of a new phase in capital accumulation (Harvey, 2007, 2006, see also Naredo and Gómez-Baggethun, 2012). The proliferation of monetary valuation of environmental goods and services (e.g. wetland banking, carbon trading and biodiversity offsets) since the late 1980s that to some ecological economists appeared as contingent, internal change of focus within the profession, is for PE the result of broader shift in a specific stage of capitalism, from State-based environmental regulation to neo-liberal market environmentalism (Bakker, 2005; McCarthy and Prudham, 2004). Manifestations of this change are the substitution of regulatory standards with "soft" governance approaches based on voluntary schemes and market-based mechanisms like pollution permit trading schemes, the substitution of tax-payer subsidized public-good services (e.g. water) with full-cost consumer pricing, or the proliferation of cost-benefit evaluations of environmental policies which generated the demand for monetary valuation techniques (e.g. Stern, 2006; TEEB, 2010). Some ecological economists, especially those familiar with Marx's theory, have also recognized the role of power, institutions and institutional change in shaping valuation and its outcomes (Martinez-Alier and O'Connor, 2002). But still EE's methodological critique remains disconnected from the actual institutional and power changes of late capitalism.

The EE micro-focus on valuation processes and institutions and the PE macro-focus on capitalist institutions and their change, are complementary, not antagonistic. Ecological Economics' efforts to change the logic and concrete practices with which we value nature should not be underestimated. Neo-liberalism and commodification are contingent, open-ended processes contested with micro-struggles also at the intellectual and discursive domain (Bakker, 2005). Ecological economists are then key actors in the very struggles that PE pertains to analyze. However, ecological economists' normative stance in favor of plural values and institutions will be naïve and politically ineffective if they do not recognize the social processes and dynamics that make this normative proposal so hard to implement. Why does "economism"

² Writing from an EE perspective Goodin (1992) argues that for Marxists the source of all value is labor, with no role for nature. As political ecologists are right to point, Marx did acknowledge nature as the prime producer of (use) value on an equal footing with the human labor that metabolizes it: 'Labor is not the source of all wealth. Nature is just as much the source of use values (and it is surely of such that material wealth consists!) as labor' (Marx (1891/1970, p. 7; quoted in Gómez-Baggethun et al., 2010). Labor, Marx argues, determines exchange value, not use value (under the capitalist mode of production). Like ecological economists, Marxist/political ecologists see nature and humans co-producing use value, and are agnostic on how humans value alternative courses of action, accepting plural motivations (Douai, 2009). However, some Marxist political ecologists have gone to the other extreme arguing that EE is wrong because it does not base itself on a labor theory of value (Burkett, 2003; Douai, 2009).

dominate? Why does the World Bank or International Union for Conservation of Nature promote markets for ecosystem services and not deliberative forums? Without a social, political-economic theory such as the one offered by PE, the critique of EE will remain a methodological and normative one and will not go far. Integrated however within a theory of political economy, the EE critique can become powerful. The normative motivation to maintain and expand the languages and articulating institutions of valuation should be integrated not only in the ecological economics project of re-embedding the economy in the ecological domain but also in the project of re-embedding the – runaway, autonomizing – economy back into the political domain (Polanyi, 1944).

In conclusion: what can we take from the two bodies of thought in concert? First, that monetary valuations are not isolated phenomena of methodological interest, but part of broader commodification processes, which involve symbolic, institutional, intellectual, discursive, and technological changes that reshape the ways humans conceive and relate to nature. These in turn are part of processes of capitalist development through accumulation by dispossession, accentuated under neo-liberalism. Second, that there are bio-physical, political, and ethical limitations to monetization, which in turn put obstacles to commodification (EE contribution), which in turn open up opportunities for opposing and re-regulating resources at stake (PE contribution). Value pluralism is not only an ethical but also a political stance, which requires political action to oppose undesirable commodification and make sure that plural values and institutions exist and proliferate.

3. To Value or Not to Value Nature With Money? A Guiding Framework

Despite links and objections with commodification, monetary valuation may not always be undesirable. This section constructs a normative framework for choosing when to engage with monetary valuation of nature and when not, blending some of the insights of PE and EE. Four criteria are offered and supported. As any normative framework, this one too expresses the authors' own values. These are made as transparent as possible. Unavoidable, the framework will be more appealing to those who share its starting egalitarian premises and the underlying politics.

Before deciding whether to accept a monetary value on a resource or ecosystem service one has to ask:

1. Will that improve the environmental conditions at stake? (additionality).
2. Will it reduce inequalities and redistribute power? (equality).
3. Is it likely to suppress other languages of valuation and value-articulating institutions? (complexity blinding)
4. Will it serve processes of enclosure of the commons (accumulation by dispossession/neo-liberalism)?

As an indicative guide, if the answer is any of the following 1 (No), 2 (No), 3 (Yes), and 4 (Yes), then one should consider staying away from monetary valuation and, if necessary, oppose it. There is a gray area of choice when some answers are satisfied, but in others the answer is an uncertain “maybe”.

The answers to criteria 1 and 2 derive from foundational principles of (social) ecological economics (Spash, 2012). The incommensurability of values (our answer to criterion 3) is also an axiom for ecological economics (Martinez-alier et al., 1998; Spash, 2012).

The answer to criterion 4 requires more explanation since it is derived from PE insights. An environmental economist could argue that there is nothing a priori wrong with enclosures and commodification if they serve to improve economic efficiency. The starting point here however is that continuous economic and metabolic growth is incompatible in the long-term with ecological sustainability (Spash, 2012). Since capitalist expansion is intrinsically related to growth (Blauwhof, 2012), processes that farther capital accumulation and

expand capital to new realms will more than likely degrade environmental conditions in the long-term and on aggregate. Second, from an egalitarian perspective the processes of enclosure of the commons that are often involved in commodification are fundamentally unequal. A good that was accessible without discrimination to all members of a community becomes something that is preferentially accessed on the basis of individual purchase power. Third, there are intrinsic qualities in human relations such as love, friendship or hospitality, and in contacts with the non-human world, that deteriorate when these are mediated by – and assumed as substitutable by – money (Hirsch, 1976).

Criterion 4 calls also for a judgment over what Gómez-Baggethun and Ruiz-Perez (2011) call the “tragedy of well-intentioned valuation”. Whereas commodification requires valuation, the inverse is not always true: valuation does not necessarily lead to commodification. The tragedy is that often scientists and environmentalists engage with monetary valuations to improve environmental protection, but end up doing the methodological or discursive lift for a commodification that eventually degrades the socio-environments at stake. It is difficult to know if any specific valuation is subject to the tragedy. Framing ecosystems as providers of services for example does not necessarily preempt their commodification and enclosure. Until recently, public good services were considered a State responsibility, off the limits for private enterprises. In this sense, question 4 calls for judgment and awareness of the political-economic context within which a monetary valuation takes place, and in particular its relation to concrete neo-liberal projects of enclosure.

The famous Costanza et al. (1997) study can serve as an example. Assume that the intention of the study was to improve environmental and social conditions (criteria 1 and 2 satisfied). In principle any single study does not foreclose on its own alternative ways of valuing nature, so criterion 3 may be also satisfied.³ If one accepts Costanza's (2006) argument that a monetary valuation of ecosystems could be used to strengthen the case for their governmental regulation, then criterion 4 would be satisfied too. Indeed valuing the world's ecosystem services at three times the world's GDP reveals the impossibility of internalizing nature with market instruments, strengthening the case for collective regulation. The “tragedy” issue then becomes crucial: could the study have had other effects than the intended ones? The cognitive shift in seeing ecosystems as exchangeable and substitutable providers of economic services is not innocent; it conceptually opens the way for their commodification (Gómez-Baggethun and Ruiz-Perez, 2011; Robertson, 2000; Spash, 2008). While this did not have to be the outcome and use of the study, it was likely to be so, given the political-historical context within which it took place. In 1997 there was a frontal neo-liberal attack on environmental regulation by Gingrich's Republican-held congress in the U.S. and the President's Council on Sustainable Development, a high level stakeholder advisory group assembled by president Clinton that produced a consensus report recommending to make a greater use of market forces in environmental policy (PCSD, 1996; see also Salzman and Ruhl, 2001). Trying to monetize ecosystems without commodifying them (Costanza, 2006) right in the middle of a political-economic process that was shifting the focus of environmental policy from regulation of environmental standards towards voluntary market instruments, represents a paradigmatic case of the tragedy of well-intentioned valuation.

³ One could argue that the study suppresses other forms of valuation, since it gives credibility and authority to monetary valuation, however one could also counter-argue that the dollar value of ecosystems derived by the authors is so absurdly high that it puts in question the whole idea of monetary valuation and opens up the space for other value-articulating institutions. Martinez-Alier and O'Connor (2002) for example argue that economic metrics can be “put to good counterfactual or paradoxical use”, exposing the limits and ad hoc nature of economic rationality. There is no evidence however that this is what Costanza et al. intended.

3.1. Never Value With Money?

If the logic of market-created monetary values is not the same as that of socially or ecologically determined values, isn't then a logical conclusion that we should never value nature with money? Some radical scholars have argued against the monetary valuation of nature under capitalism (Burkett, 2003), or even in general (Nelson and Timmerman, 2011). The argument here is that as long as there is presence of exchange value in an economy, there is an unstoppable drive for it to expand to all realms (Douai, 2009). Money in other words unavoidably will produce enclosures and commodification. Pushed to its extreme, this becomes a position against the use of money in general, since most commodities produced involve in one way or the other some form of an ecological component (e.g. land or a "natural subsidy"). Indeed, Nelson and Timmerman (2011, p. 17) envisage sustainable societies without money organized into "multiplying semi-autonomous cells – households, neighborhoods, and bioregional communities – with strong organic multilateral networks connected through 'compacts' and global principles' ... 'community-oriented production determined by self-managed democratic decision making'". This stance permeates some of the most radical critiques of valuation, and requires a brief response, since it leads to the view of "all or nothing" indicated in the title of this article.

First, there is no universal social law according to which once money takes root it can only expand, no matter what the social reactions to it and the resulting institutional arrangements are. Second following Polanyi's scheme, some commodities are not fictitious; they are produced for sale and exchange. There is no problem with valuing tomatoes with money; deliberative forums might be necessary for certain ecosystem or social services, but not for all commodity exchanges. Third, and in relation, a complex industrialized society, even with a dramatically reduced material throughput, will find it impossible to function without some form of money. Many of the basic goods that serve everyday needs are produced through multi-level, spatially fragmented industrial processes, which cannot be controlled within bioregions or organized through mutual voluntary contracts. Money does help things by simplifying exchange and reducing the time spent in constant deliberations. Even the staunchest anti-capitalist regimes refrained from abolishing money when it came down to accounting how much a factory should produce (Nelson, 2011). Fourth, debt, money, commodities and markets (e.g. for timber) existed before and will exist after capitalism (Graeber, 2011). What is particular is their proliferation under capitalism, not their existence. As Harvey (1996, 157) argues: "all the time we engage in commodity exchanges mediated by money (and this proposition holds just as firmly for any prospective socialist society) and it will be impossible in practice to avoid money calculations".

More practically, as the next section shows there are many instances where saying "no" to monetary valuations is the wrong answer if the goal is an egalitarian socio-ecological transition.

4. Practical Examples

This section explains how the four criteria derived in this article can be applied to concrete cases of valuation. Table 1 summarizes the key findings.

4.1. Pollution Damages: The Chevron-Texaco Case in Ecuador

In February 2011, a Court in Ecuador ordered oil giant Chevron to pay nearly US\$9 billion in damages for polluting the Amazon forest, the second largest ever judgment for environmental contamination in the world after the US\$20 billion British Petroleum (BP) has agreed to pay to compensate victims of the Gulf of Mexico spill. Allocation of the damages by the judge included a series of environmental and

damage valuation studies (Martinez-Alier, 2011). Were the indigenous groups right to stake their claims in monetary terms?

Criterion 1 is satisfied. Yes, the environment stands to benefit since a significant part of the money is to be devoted to cleaning-up and restoration activities,⁴ while the fine will act as a deterrent for polluting corporations in other parts of the world by the counter-incentive of seeing the polluter-pays principle enforced.

Criterion 2 is satisfied also. Yes, the fine is clearly redistributive: a rich company and its shareholders are asked to correct a cost that they shifted to politically and economically weaker indigenous communities (Martinez-Alier, 2011). The decision is politically empowering. Marginalized indigenous communities confronted and won a powerful corporation, setting a legal precedent that reinforces international, cross-border mechanisms of justice.

Criterion 3 is probably satisfied also. The process did not directly favor the dominance of economic values and economic value-articulating institutions. The process was conducted in Courts (and not through direct compensation agreements); different logics of evaluation, such as historical justice, were sustained throughout the process. The Court valued monetarily only those damages directly linked to the cost of reparation of environmental and health impacts. While compensation for environmental damages and deaths could have increased the amount gained by the plaintiffs (Martinez-Alier, 2011), it is good that this did not happen, since it would have commensurated ecosystem and life loss with money. The plaintiffs maintained throughout the process that they seek compensation only for damages and reparation and that the "crime committed by Texaco is incalculable".⁵ Most importantly, Chevron was given 15 days to apologize publicly; if not, the fine would double. This was a clear indication by the Judge on the symbolic nature of the punishment, expressing values of recognition, responsibility or honor, that go beyond money (O'Neill, 2011).

Criterion 4 is also satisfied. The process is not an isolated case, but part of a broader political struggle by indigenous communities in Ecuador for a recognition of their identity and rights for self-determination. As such the Court case was part of a challenge to the macropolitical-economic system and was not linked to neoliberal political processes that produced enclosures in Ecuador and Latin America in general.

The possibility of a "tragedy of well-intentioned valuation" requires some thinking. Could the victory have un-intended effects? To raise the millions of dollars necessary for pursuing the case, the lawyer of the indigenous plaintiffs borrowed money and promised returns from legal fees to mogul investors, including a dispute-financing capital hedge fund listed in the Isle of Guernsey (Barrett, 2011). Winning the case became involuntarily part of "a business". This is an example of the multiple ways in which monetary valuation indirectly encroaches the domain of other value-articulating institutions (in this case, courts) (Hirsch, 1976). Economic power increasingly determines access to justice, and in turn the justice process becomes part of capital accumulation. This highlights the tricky terrain environmental movements, such as the Ecuadorian plaintiffs, have to navigate when engaging with compensation if they are not to be accused, as they were from a Federal Judge in the U.S., that "they are in it for the money" (Barrett, 2011).

⁴ More specifically, US\$5.39 billion are allocated to restore polluted soil, US\$1.4 billion to create a community health system, US\$800 million to treat sick people, US\$600 million to restore polluted sources of water, US\$200 million to recover native species, US\$150 million to transport clean water, and US\$100 million to create a community cultural reconstruction program.

⁵ Guillermo Grema, head of the Quichua Indian community, cited in the New York Times article "Ecuador Judge Orders Chevron to Pay \$9 Billion" (February 14, 2011, on-line reprint).

Table 1

Real-world examples of valuation and application of the four criteria.

Case	Environment improved?	Equality improved?	Value plurality maintained?	Enclosure promoted?	To value?
Damages by Chevron-Texaco	Yes	Yes	Yes	No	Yes
Full-cost pricing	Maybe	No	No	Yes	No
Democratized water pricing	Maybe	Yes	Yes	No	Yes
Markets for ecosystem services	No/maybe	No/maybe	No	Yes	No
Public payments for ecosystem services	Yes	Yes	Yes	No	Yes

4.2. Pricing Water

Full-cost pricing means charging water users the full economic cost of the end-product they consume, including external costs on the environment (Rogers et al., 2002). The intention is that the price of the final product of water reflects its full economic value including externalities. Currently, the social and environmental benefits and costs of water use are not fully accounted for in money terms. Non-monetary logics are used to express social values in the distribution of water, such as for example when water is provided free of, or at low cost to certain users. Since the early 1990s, international bodies such as the World Bank and the World Water Forum have been promoting full-cost pricing in the name of economic efficiency and environmental conservation. Paying more, they argue, will make users consume less and leave more water for the environment.

How does valuing water in money terms fare according to the four criteria? First, although conservation benefits of full-cost pricing are likely to be positive in most cases,⁶ this will much depend on the structure of tariffs and on how and where money is reinvested. There is evidence suggesting that given the low price elasticity of water, moral norms may be important for conservation, but these deteriorate once prices receive prominence (Bakker, 2001). Also if the higher prices translate into profits for private utilities, these may be reinvested to further growth, which would offset any environmental benefits (“rebound effect”). Second, full-cost pricing is likely to be socially regressive, since income taxes, the source of subsidies, are often more redistributive than water prices. Poorer households are more vulnerable to rises in the cost of basic services such as water, compared to wealthier ones for which water costs tend to remain a miniscule part of household budget. Third, other factors equal, the commodification of water through full-cost pricing privileges its economic dimension over alternative values of water (social, ritual, symbolic, ecological) and turns a public good into a private consumption good, shifting the weight for its regulation from state or communities to market forces (Bakker, 2005). Fourth, politically-speaking, such shifts in the water sector are regularly part of the neo-liberal push for the privatization of public services often promoted in the name of economic efficiency and environmental protection (Bakker, 2001; Swyngedouw et al., 2002). Full-cost pricing is a prerequisite for making water provision profitable to private businesses, more so as it disconnects the financing of water from the whims of the State.

Alternative Water Forums are right to oppose the commodification and privatization of water. However, statements like “water is not for sale” may be misleading if interpreted literally. While rain falls free of cost, drinking water is an industrial product and has economic costs. These costs can be recovered by tariffs, taxes or debts. How they are recovered and who pays how much is a political question of distribution. Consider a public or municipal water system which: 1. Users or workers own it; 2. Investments and budgets are decided through public deliberative processes; 3. Progressive tariffs recover a substantial part of capital/operational costs and environmental externalities, with wealthier users who consume more covering the greatest part of the costs; and 4.

Subsidies or redistributive tariffs secure access by the poor to the necessary quantity of water for a context-defined dignified standard of living. Environmental conditions stand to benefit, the policies are clearly redistributive and egalitarian and multiple forms of valuation are maintained through, first, deliberative allocation of investments and second, through subsidies that are decided following a social and ecological criteria beyond narrow economic logics (Table 1). These are policies implemented by progressive public water utilities around the world against the neo-liberal tendency for privatization (Kallis, 2007). Water is partly “for sale” under such policies, but the four criteria are satisfied. We are in favor of partial monetary valuation of water under these circumstances and so in fact is the Alternative Water Forum movement, which often cites these experiences as viable alternatives to commodification and privatization (Hall et al., 2009).

4.3. Payments and Markets for Ecosystem Services

Payments for Ecosystem Services (PES) are most often defined as voluntary transactions where a well-defined ecosystem service is ‘bought’ by at least one ecosystem service buyer from a at least one ecosystem service provider, if and only if, (conditionality), the ecosystem service provider secures ecosystem service provision (Wunder, 2005: 3). In practice few PES schemes fulfill all the conditions of this definition. For example, ecosystem services are frequently ill defined (Muñoz-Piña et al., 2008) and the funds used for the payments are regularly gathered through non-voluntary means such as taxes or user fees (Muradian et al., 2010). Our thesis here is that valuation processes involved in PES as framed in the bulk of the literature are likely to collide with the tentative criteria we set in this paper, although this may vary greatly depending on the specific characteristics of the scheme involved and in the way the scheme is framed (Table 1). In this sense we distinguish between market-based payments for ecosystem services, which do not satisfy our criteria, and public payments, in money (such as subsidies) or in kind, for rewarding or incentivizing ecosystem protection, which do satisfy them.

Concerning the first criterion, the conservation effectiveness of PES schemes depends strongly on the institutional design and on the power structures shaping such design (Vatn, 2010). For example, Muradian et al. (in press) note that some of the largest and most emblematic PES schemes worldwide, such as the national payment programs of Costa Rica and Mexico, have achieved low degrees of conservation effectiveness. In the case of Costa Rica, studies have highlighted that the program has often targeted areas with low deforestation risk (Sierra and Russman, 2006; Sanchez-Azofeifa et al., 2007), enrolling many large farms and private companies (Porrás, 2010). According to Le Coq et al. (2012), this allocation of payments was largely determined by the influence of the forestry sector, which saw in the PES scheme an opportunity to capture public funds.

Second, even if the literature tends to emphasize the pro-poor character of PES schemes (Landell-Mills and Porrás, 2002; Grieg-Gran et al., 2005; Pagiola et al., 2005), research suggests that most PES schemes are likely to exclude the poorer social strata. For example, Asquith et al. (2008) report that landless immigrants in Santa Rosa, Bolivia, were unable to participate in a local PES scheme because they have no land from which to provide ecosystem services. Similarly, Muñoz-Piña et al. (2008) report that while PES in Mexico are designed to reach the poor

⁶ This may not hold in all cases, for example when agricultural water (including subsistence), particularly in the South, is subject to pricing and thus commensurated with the water used by industry.

“there appears to be a bias against the poorest of the poor”, probably due to barriers to scheme participation linked to poverty such as fewer opportunities to interact with governmental organizations and officials. Furthermore, some schemes such as the Costa Rican, have benefited landlords owning large portions of land fostering further inequality.

Third, the dominant theory for PES is based on the assumption that ecosystem service degradation is the result of market failures to account for externalities, and that valuing and paying for such services will help overcoming this failure (Engel et al., 2008; Kinzig et al., 2008). Under this conceptualization of PES, the payment takes the form of an *incentive* whereby the payment should be ideally coupled to the quantity ecosystem service that is actually delivered. As Vatn (2010) notes, conceptualized in this way the scheme adopts the form of a pure ‘seller–buyer’ instrumental relationship driven by the pursuit of profit maximization (by providers) and of utility maximization (by beneficiaries). While, in practice many payment schemes do not constitute real markets (Muradian et al. *in press*) and although PES do not preclude non-monetary forms of payment (Asquith et al., 2008), it is obvious that the dominant framing of PES as a way to solve a market failure privileges market rationality and the economic discourse over alternative valuation languages. A recent research on a PES scheme in Chiapas, Mexico, shows that people receiving payments perceive motivations for conservation to be more contingent on monetary and utilitarian motives, this preference increasing with the number of years receiving the payment (Rico et al., 2013).

Fourth, it has been argued that PES can be instrumental to neoliberal processes of commodification and private enclosure of land (Büscher, 2012; Kosoy and Corbera, 2010). Vatn (2010) argues that while land ownership does neither need to be fully formalized nor privatized to set up payment schemes, PES represent a clear impetus in this direction. Others have argued that land titling process involved in setting up markets generally favor private at the expense of common property systems (Grant, 1998), and that PES can reinforce existing exclusions (Ibarra et al. 2011), both via the dynamics of existing land distribution and because landless farmers will in most cases be unable to engage in them (Corbera et al., 2007a).

An alternative notion of PES (see e.g. Muradian et al., 2010) which emphasizes their use as instruments of redistribution to environmental protection allows us to bring into the analysis a wider range of mechanisms, some of which are more likely to meet criteria of distributional and procedural justice. Corbera et al. (2007b) document case studies in Latin America, where PES-like schemes were set up despite the fact that land titling was not fully formalized, and also in places ruled under common property regimes (e.g. ‘Sociobosque’ in Ecuador and the PES scheme in Mexico). This deviation from PES orthodoxy opens up the possibility of reframing PES more in accordance with principles of distributional justice or even as a tool to mitigate ecologically unequal exchange. Gutman (2007) suggests that PES can be used as a mechanism to transfer funds from the cities to the countryside, while Gómez-Baggethun (2011) advocates reframing PES as a mechanism to articulate compensations of ecological debts. Vatn notes that PES schemes can be reframed as *rewards* (as opposed to *incentives*) for an act of stewardship where the payment is more about recognition. Rather than the profit motive, the payment in this case can be seen as motivated by reciprocity-driven voluntary cooperation, whereby stewards are rewarded for their contribution to the common good. Finally, it should be noted that some PES-like schemes have proved able to integrate a diversity of valuation languages.

An example in the above is the Yasuni ITT initiative, in which the Government of Ecuador is willing to leave more than 900 million barrels of oil underground for compensation by the international community covering 50% of opportunity costs. Valuation languages involved in the negotiations included customary territorial rights of indigenous communities, biodiversity conservation, climate justice,

and monetary measurement (i.e. calculation of opportunity costs). A plurality of languages of valuation is maintained, and the project does not contribute in some obvious way to processes of enclosure, privatization or dispossession. We have no objections to such redistributive, state-sanctioned programs for ecosystem services (Table 1), which are in fact much closer to conservation subsidies.

5. Conclusions

The dilemma of whether to value nature in monetary terms or not is one that many environmentalists and ecological economists have faced. The conventional framing of the choice is one between accepting the power of markets and playing their game to win environmental concessions versus a purist perspective of saying no to any hint of money or markets in environmental policy.

Mobilizing and blending insights from ecological economics and political ecology this article has tried to redefine the terms of the choice and chart a path for a pragmatic yet radical approach. By radical, we mean that an answer to the “monetary value question” should be given first with reference to the goals of environmental protection and egalitarianism, including elements of distributive and procedural justice, and second, with sensitivity to the position of a particular action within contemporary political-economic dynamics and the rooted positions of social and environmental movements. By pragmatic, we mean that a universal answer cannot be given to the question “to value or not to value”, independently of past experience, as well as the specifics and the political context and purpose of a particular valuation. Pragmatism is “a theory or practice that places primary emphasis on practical circumstances and goals ... [and which] distrusts ... abstract ideas” (Heywood, 2002, 43). By pragmatism we do not mean accepting that we live in a market society and that, like it or not, we have to play by its rules. We mean that while radical systemic change is necessary for sustainability, this may come about through intermediate transitory actions, free from absolutist dilemmas.

The three practical cases discussed in this paper give an example of what this radical pragmatism might look like in practice: we gave a qualified “yes” to payments by Chevron-Texaco, and a clear “no” in the cases of full-cost pricing and markets and payment for ecosystem services as usually promoted. Importantly, for the latter two, we argued that there are alternative institutional and political set-ups under which paying for water or for ecosystem services might do more good than harm from the social and environmental point of view. A dogmatic stance against any use of money offers little help when one evaluates whether large corporations should pay for their damages upon indigenous communities, whether democratic municipal utilities should charge for water, or whether it is good to subsidize communities for conserving ecosystems or keeping oil in the ground.

Acknowledgments

We thank Jeroen van der Bergh, Larry Lohman, Clive Spash and three anonymous reviewers for their valuable criticisms and suggestions to earlier drafts of the paper. Kallis acknowledges support from the Marie Curie ITN grant PITN-GA-2011-289374-ENTITLE, European Network of Political Ecology.

References

- Asquith, N.M., Teresa Vargas, M., Wunder, S., 2008. Selling two environmental services: in-kind payments for bird habitat and watershed protection in Los Negros, Bolivia. *Ecological Economics* 65, 675–684.
- Bakker, K., 2001. Paying for water: water pricing and equity in England and Wales. *Transactions of the Institute of British Geographers* 26, 143–164.
- Bakker, K., 2003. *An Uncooperative Commodity: Privatizing Water in England and Wales*. Oxford University Press, Oxford.

- Bakker, K., 2005. Neoliberalizing nature? Market environmentalism in water supply in England and Wales. *Annals of the Association of American Geographers* 95, 542–565.
- Barrett, P.M., 2011. Amazon Crusader. Chevron Pest. Fraud? *Bloomberg Businessweek Magazine* March 09, 2011.
- Blaikie, P., Brookfield, H., 1987. *Land Degradation and Society*. Methuen, New York, London.
- Blauwhof, F.B., 2012. Overcoming accumulation: is a capitalist steady-state economy possible? *Ecological Economics* 84, 254–261.
- Burkett, P., 2003. The value problem in ecological economics: lessons from the physiocrats and Marx. *Organization and Environment* 16, 137–167.
- Büscher, B., 2012. Payments for ecosystem services as neoliberal conservation: (re)interpreting evidence from the Maloti-Drakensberg, South Africa. *Conservation and Society* 10, 28–41.
- Castoriadis, C., 1965. *Modern Capitalism and Revolution*. B.Potter, London.
- Corbera, E., Brown, K., Adger, W.N., 2007a. The equity and legitimacy of markets for ecosystem services. *Development and Change* 38 (4), 587–613.
- Corbera, E., Kosoy, N., Martínez-Tuna, M., 2007b. The equity implications of marketing ecosystem services in protected areas and rural communities: case studies from Meso-America. *Global Environmental Change* 17, 365–380.
- Costanza, R., 2006. Nature: ecosystems without commodifying them. *Nature* 443 (7113), 749. <http://dx.doi.org/10.1038/443749b>.
- Costanza, R., d'Arge, R., de Groot, R., Faber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P., van der Belt, M., 1997. The value of the world's ecosystems and natural capital. *Nature* 387, 253–260.
- De Marchi, B., Funtowicz, S.O., Lo, Cascio S., Munda, G., 2000. Combining participative and institutional approaches with multicriteria evaluation. An empirical study for water issues in Troina, Sicily. *Ecological Economics* 34, 267–282.
- Douai, A., 2009. Value theory in ecological economics: the contribution of a political economy of wealth. *Environmental Values* 18, 257–284.
- Engel, S., Pagiola, S., Wunder, S., 2008. Designing payments for environmental services in theory and practice: an overview of the issue. *Ecological Economics* 65, 663–674.
- Escobar, A., 1996. Constructing nature: elements for a poststructural political ecology. In: Peet, R., Watts, M. (Eds.), *Environment, Development, Social Movements*. Routledge, London, pp. 46–68.
- Federici, S., 2004. *Caliban and the witch. The body and primitive accumulation*. Autonomedia.
- Gamboa, G., Munda, G., 2007. The problem of windfarm location: a social multi-criteria evaluation framework. *Energy Policy* 35, 1564–1583.
- Gómez-Baggethun, E., 2011. Análisis crítico de los Pagos por Servicios Ambientales: de la gestación teórica a la implementación. *Revista Española de Estudios Agrosociales y Pesqueros* 228, 11–47.
- Gómez-Baggethun, E., Ruiz-Perez, M., 2011. Economic valuation and the commodification of ecosystem services. *Progress in Physical Geography* 35, 613–628.
- Gómez-Baggethun, E., de Groot, R., Lomas, P., Montes, C., 2010. The history of ecosystem services in economic theory and practice: from early notions to markets and payment schemes. *Ecological Economics* 69, 1209–1218.
- Goodin, R.E., 1992. *Green Political Theory*. Polity Press, Oxford.
- Graeber, D., 2011. *Debt: the First 5000 Years*. Melville House, New York.
- Grant, C., 1998. When Titling Meets Tradition. *Proceedings of the 39th Australian Surveyors Congress*, Launceston 8–13 November 1998.
- Grieg-Gran, M., Porras, I.T., Wunder, S., 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. *World Development* 33, 1511–1527.
- Gutman, P., 2007. Ecosystem services: foundations for a new rural urban compact. *Ecological Economics* 62, 384–387.
- Hall, D., Lobina, E., Corral, V., Hoedeman, O., Terhorst, P., Pigeon, M., Kishimoto, S., 2009. *Public-public Partnerships in Water*. Public Services International Research Unit. University of Greenwich, Greenwich.
- Harvey, D., 1996. *Justice, Nature and the Geography of Difference*. Blackwell, Oxford.
- Harvey, D., 2006. *Limits to Capital*, 3rd edition. Verso, London.
- Harvey, D., 2007. *A Brief History of Neo-liberalism*. Oxford University Press, Oxford.
- Heywood, A., 2002. *Politics*, 2nd edition. Palgrave, Basingstoke and New York.
- Hirsch, F., 1976. *Social Limits to Growth*. Harvard University Press, Boston.
- Howarth, R.B., Wilson, M.A., 2006. A theoretical approach to deliberative valuation: aggregation by mutual consent. *Land Economics* 82, 1–16.
- Ibarra, J.T., Barreau, A., Del Campo, C., Camacho, C.I., Martin, G.J., McCandless, S.R., 2011. When formal and market-based conservation mechanisms disrupt food sovereignty: impacts of community conservation and payments for environmental services on an indigenous community of Oaxaca, Mexico. *International Forestry Review* 13, 318–337.
- Jacobs, M., 1997. Environmental valuation, deliberative democracy and public decision-making institutions. *Valuing Nature*. 211–231.
- Kallis, G., 2007. Guidelines for integrated urban water system management in coastal areas of the Mediterranean. *Instruments*. vol. 2. UNEP, Split.
- Kinzig, A., Perrings, C., Chapin III, F.S., Polasky, S., Smith, V., Tilman, D., Turner II, B., 2011. Paying for ecosystem services-promise and peril. *Science* 334, 603–604.
- Kosoy, N., Corbera, E., 2010. Payments for ecosystem services as commodity fetishism. *Ecological Economics* 69 (6), 1228–1236 (Limburg, K.E., O'Neill, R.V.).
- Landell-Mills, N., Porras, I.T., 2002. Silver bullet or fools' gold. A Global Review of Markets for Forest Environmental Service and Their Impact on the Poor. Report. IIED, London.
- Le Coq, J.F., Froger, G., Legrand, T., Pesche, D., Saenz, F., 2012. The governance of Costa Rica's programme of payments for environmental services: a stakeholder's perspective. In: Muradian, R., Rival, L. (Eds.), *Governing the provision of ecosystem services*. Springer, The Netherlands, pp. 235–256.
- M'Gonigle, R.M., 1999. Ecological economics and political ecology: towards a necessary synthesis. *Ecological Economics* 28, 11–26.
- Martinez-Alier, J., 2002. *The environmentalism of the poor*. Edward Elgar Publishing Northampton, MA.
- Martinez-Alier, J., 2011. El caso Chevron Texaco en Ecuador: una muy buena sentencia que podría ser un poco mejor. Available at <http://www.business-humanrights.org/Links/Repository/1004528>.
- Martinez-Alier, J., O'Connor, M., 2002. Distributional issues: an overview. In: van den Bergh, J. (Ed.), *Handbook of Environmental and Resource Economics*. Edward Elgar, UK (Paperback edition).
- Martinez-Alier, J., Munda, G., O'Neill, J., 1998. Weak comparability of values as a foundation for ecological economics. *Ecological Economics* 26, 277–286.
- Martin-López, B., Montes, C., Benayas, J., 2008. Economic valuation of biodiversity conservation: the meaning of numbers. *Conservation Biology* 139, 67–82.
- McCarthy, J., Prudham, S., 2004. Neoliberal nature and the nature of neoliberalism. *Geoforum* 35, 275–283.
- Muñoz-Piña, C., Guevara, A., Torres, J., Braña, J., 2008. Paying for the hydrological services of Mexico's forests: analysis, negotiations and results. *Ecological Economics* 65, 725–736.
- Muradian, R., Corbera, E., Pascual, U., Kosoy, N., May, P.H., 2010. Reconciling theory and practice: an alternative conceptual framework for understanding payments for environmental services. *Ecological Economics* 69 (2010), 1202–1208.
- Muradian, R., Arsel, M., Pellegrini, L., Adaman, F., Aguilar, B., Agarwal, B., Corbera, E., Ezzine, D., Farley, J., Froger, G., Garcia-Frapolli, E., Gómez-Baggethun, E., Gowdy, J., Kosoy, Le Coq, Leroy, P., May, P., Méral, P., Mibielli, P., Norgaard, R., et al., 2013. Payments for ecosystem services and the fatal attraction of win-win solutions. *Conservation Letters*. <http://dx.doi.org/10.1111/j.1755-263X.2012.00309.x> (in press).
- Naredo, J.M., Gómez-Baggethun, E., 2012. Hacia nuevos horizontes de acumulación en la economía verde. *Viento Sur* 124, 67–75.
- Nelson, A., 2011. *Life without money. Building Fair and Sustainable Economies*. Pluto Press.
- Nelson, A., Timmerman, F., 2011. Use-value and non-market socialism. Chapter 1. In: Nelson, A. (Ed.), *Life without money. Building fair and sustainable economies*. Pluto Press.
- Norgaard, R., 2009. The environmental case for a collective assessment of economism. In: Holt, R.F., Pressman, S., Spash, C. (Eds.), *Post Keynesian and Environmental Economics. Confronting Environmental Issues*. Edward Elgar, Cheltenham.
- O'Neill, J., 2011. The price of an apology: justice, wellbeing and compensation. Available at www.environmentalconflicts.com.
- O'Neill, J., 2001. Representing people, representing nature, representing the world. *Environment and Planning C* 19, 483–500.
- Pagiola, S., Arcenas, A., Platais, G., 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and evidence to date from Latin America. *World Development* 33 (2), 237–253.
- PCSD, 1996. President's Council on Sustainable Development, Sustainable America: A new consensus for the Prosperity, Opportunity and Healthy Environment for the Future, 26.
- Peet, R., Watts, M., 2004. *Liberation ecologies: environment, development, social movements*. Routledge, London and New York.
- Polanyi, K., 1944. *The Great Transformation*. Beacon Press, Boston.
- Porras, I., 2010. Fair and green? Social impacts of payments for environmental services in Costa Rica. IIED, London, UK.
- Prudham, S., 2007. The fictions of autonomous invention: accumulation by dispossession, commodification and life patents in Canada. *Antipode* 39, 406–429.
- Rico García-Amado, L., Ruiz-Pérez, M., Barrasa-García, S., 2013. Motivation for conservation: assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Chiapas, Mexico. *Ecological Economics* 89, 92–100.
- Robertson, M., 2000. No net loss: wetland restoration and the incomplete capitalization of nature. *Antipode* 32 (4), 463–493.
- Rodríguez, J.P., Douglas Beard, T., Bennett, E.M., Cumming, G.S., Cork, S.J., Agard, J., Dobson, A.P., Peterson, G.D., 2006. Trade-offs across space, time, and ecosystem services. *Ecology and Society* 11, 28.
- Rodríguez-Labajos, Beatriz, Martínez-Alier, Joan, 2012. The economics of ecosystems and biodiversity: when is money valuation appropriate. In: Healy, H., Martínez-Alier, J., Temper, L., Walter, M., Gerber, J.F. (Eds.), *Ecological Economics from the Ground Up*. Routledge, London, pp. 488–512 (chapter 18).
- Rogers, P., de Silva, R., Bhatia, R., 2002. Water is an economic good: how to use prices to promote equity, efficiency, and sustainability. *Water Policy* 4 (1), 1–17.
- Salzman, J., Ruhl, J.B., 2001. Currencies and the commodification of environmental law. *Stanford Law Review* 53, 607–694.
- Sanchez-Azofeifa, G., Pfaff, A., Robalino, J., Boomhower, J., 2007. Costa Rica's payment for environmental services program: intention, implementation, and impact. *Conservation Biology* 21, 1165–1173.
- Sierra, R., Russman, E., 2006. On the efficiency of environmental service payments: a forest conservation assessment in the Osa Peninsula, Costa Rica. *Ecological Economics* 59, 131–141.
- Spash, C., 2008. How much is that ecosystem in the window? The one with the biodiverse trail. *Environmental Values* 17 (2), 259–284.
- Spash, C., 2012. New foundations for ecological economics. *Ecological Economics* 77, 36–47.
- Spash, C.L., Hanley, N., 1995. Preferences, information and biodiversity preservation. *Ecological Economics* 12, 191–208.
- Stern, N., 2006. *Stern Review of the Economics of Climate Change*. Cambridge University Press, Cambridge.

- Swyngedouw, E., Kaika, M., Castro, E., 2002. Urban water: a political ecologic perspective. *Built environment* 28 (2), 124–137.
- The Economics of Ecosystems and Biodiversity (TEEB), 2010. *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*. Earthscan, London.
- Vatn, A., 2000. The environment as a commodity. *Environmental Values* 9, 493–509.
- Vatn, A., 2005. Rationality, institutions and environmental policy. *Ecological Economics* 55 (2005), 203–217.
- Vatn, A., 2010. An institutional analysis of payments for environmental services. *Ecological Economics* 6, 1245–1252.
- Vatn, A., Bromley, D., 1994. Choices without prices without apologies. *Journal of Environmental Economics and Management* 26, 129–148.
- Wunder, S., 2005. Payments for environmental services: Some nuts and bolts. Occasional Paper 42. CIFOR, Bogor.
- Zografos, C., Howarth, R.B. (Eds.), 2008. *Deliberative Ecological Economics*. Oxford University Press, Delhi.