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The Shallow or the Deep Ecological Economics Movement?

by

Clive L. Spash

Abstract

Ecological economics and its policy recommendations have become overwhelmed by economic valuation, shadow pricing, sustainability measures, and squeezing Nature into the commodity boxes of goods, services and capital in order to make it part of mainstream economic, financial and banking discourses. There are deeper concerns which touch upon the understanding of humanity in its various social, psychological, political and ethical facets. The relationship with Nature proposed by the ecological economics movement has the potential to be far reaching. However, this is not the picture portrayed by surveying the amassed body of articles from this journal or by many of those claiming affiliation. A shallow movement, allied to a business as usual politics and economy, has become dominant and imposes its preoccupation with mainstream economic concepts and values. If, instead, ecological economists choose a path deep into the world of interdisciplinary endeavour they will need to be prepared to transform themselves and society. The implications go far beyond the pragmatic use of magic numbers to convince politicians and the public that ecology still has something relevant to say in the 21st Century.

Keywords

Social Ecological Economics, Resource and Environmental Economics, Pragmatism; Political Economy; Radical Economics; Ontology; Epistemology; Methodology; Ideology

1. Introduction

The emergence of ecological economists from their former relative obscurity marks a turning-point in our scientific communities. However, their message is twisted and misused. A shallow, but presently rather powerful movement, and a deep, but less influential movement, compete for our attention.

That opening paragraph is borrowed from Arnae Naess (1973: 95) with the replacement of ‘ecologists’ by ‘ecological economists’. Some twenty-five years after its modern incarnation the ecological economics movement has reached a parallel with the concerns Naess had for ecology in the early 1970s.¹ The movement has expanded to include all sorts of academics and researchers, it has a successful journal as measured by such things as citations indexes, and an international society which has spread regional branches globally. Some of the founders have gained a second life while others have risen from relative obscurity to international renown. Economists well embedded in the establishment, (including winners of the Sveriges Riksbank prize in economic sciences in memory of Alfred Nobel) have seemingly paid attention by gracing the movement with their presence at conferences (e.g., Sen), their thoughts in print (e.g., Solow, Stiglitz), their collaborations (e.g., Arrow) and some, possibly less embedded, have done all three (e.g., Ostrom). Yet the coherence in the message and conception of what this movement is all about heavily diverge amongst ‘participants’, whether they be undergraduate students looking for alternative thinking on economics or heavily cited professors with recognised standing in the field. Indeed, what is deep, thought provoking and new in ecological economics may be more easily articulated by the former, while being totally absent from the writings of the latter.

This paper aims to explore and explain what is deep and what is shallow in the ecological economics movement at a time when I believe there is a crucial crossroads to be negotiated and a path to be chosen. This paper is not a philosophical manifesto in the way

that Naess's deep ecology proposals might be regarded, but does share his concerns for the articulation and redefinition of underlying reasons for pursuing a given area of study. More than that there is an implication in Naess (1973) that being a field ecologists makes a person aware of various aspects of and values in Nature. In the same way Faber (2008) has described how serious commitment to ecological economics requires an attentiveness which raises awareness of and ability to understand key concepts and values. As he states: "we need the ability to experience unfiltered what we see, feel, smell, hear and taste in nature. ... For only if we are attentive to the dimensions of real life can we make sure that our choice of scientific lens for observing the world does not altogether obscure our true problem of caring for nature and justice." This is something of a rejection of the Humean fact-value dichotomy and an appeal to our basic understandings of the real world as both empirical and moral.

Naess made a similar appeal in his definition of deep ecology. However, despite potential similarities, deep ecological economics is a rather separate undertaking than deep ecology. One reason is its independence from mystical and spiritual overtones.ⁱⁱ Instead an emphasis should be placed on addressing concerns about environmental values and human relationships with Nature through a theory of ethical conduct, where an explicit account is given of the political and economic implications.ⁱⁱⁱ In order to be successful, such a frame must certainly be able to take seriously, and address, the deep philosophical concerns raised by Naess and others (e.g., eco-feminists) about human alienation from and domination over Nature, as built into modern patriarchal society. What I will explore here is how this should lead ecological economists to a radically different approach from mainstream economists for addressing a range of both theoretical and practical concerns relating to the social, ecological and economic reality in which we now live.

Actually, in exploring these issues I wish to largely avoid a simple dichotomy with deep on one side and shallow on the other, although this serves as a useful shorthand for the

general issues raised. As Nelson (2009) has argued, such black and white divisions can prove unnecessarily antagonistic. The world is rarely so simple as dichotomous categories claim and human affairs least of all. Indeed, what I will show is that the ecological economics movement is populated by a variety of contributors and affiliates who can be separated by their theoretical and ideological positions into three main camps. Even this proves inadequate for capturing the full picture of argumentation in the field about direction and meaning. Thus, the three camps are supplemented by the philosophy of one ‘big tent’ and three other conjunctions of the main positions. The extent to which these seven positions are populated by a substantive number of researchers, or representative in any way, is an empirical question that this paper does not venture to address, but investigation of which is ongoing and pursued elsewhere (see Spash and Ryan, 2012). The aim here is to set out the theoretical and ideological landscape of ecological economics in order to identify where people are located. This requires not being afraid of pointing out where substantive divisions, and inconsistencies, lie.

The paper classifies thought within ecological economics as broadly constituted. In the next section I briefly outline the history of the movement and how this created the background for the development of different camps and advocacy of incompatible epistemologies. I then, in section 3, propose a set of categories to explain how ecological economics has developed and where it now stands as a conflicted and divided field of research. The three main camps are described as new environmental pragmatism, new resource economics and social ecological economics. In section 4, I consider the implications of these categories for unity and division within ecological economics. In the conclusions, section 5, I return to the question of what is deep and what is shallow in the ecological economics movement.

2. Ecological Economics as a Movement

Modern ecological economics arose partially from a crisis in environmental economics which by the late 1980s appeared devoid of novelty and influence (Spash, 1999, 2011a). In the 1960s and 70s environmental regulatory agencies had been established in many countries and legislation brought-in to control some serious pollutants and toxic substances using physical standards and bans, which made economic instruments politically unnecessary. In the ensuing era of increasing neo-liberalism (e.g., under Thatcher and Regan), the environment largely dropped-off the political agenda. Yet, despite the preceding era of legislative action, major environmental problems had not gone away. Ozone holes, acidic deposition, human induced climate change and species loss were some of the still present and real dangers. At the same time the discourse of environmental and resource economics, and its academic curricula, began to exclude radical economic critiques and earlier free thinking theories (e.g., Daly, 1977; Hirsch, 1977; Kapp, 1978; Kneese et al., 1970; Mishan, 1969; Page, 1977; Schumacher, 1973). The field became inherently conservative.

Ecological economics then offered a new and exciting prospect for critical environmental economists to rekindle the flame of passion for their subject, even though it required moving outside the institutional boundaries of their discipline and learning from ecologists. Modern ecological economics was from the outset operating on an openly ideological basis, by which I mean there was no question that environmental problems were real social issues needing political and economic action. The important thing was to get the message 'out there' and raise awareness of the environment-economy interconnect. The first conference of the International Society for Ecological Economics (ISEE) was held in Washington, D.C., and hosted by the World Bank, where, with much publicity, Herman Daly had recently been appointed.^{iv} The hope was for some major impacts by creating a union of ecologists and economists seeking new avenues into the policy debate.

Intrepid ecologists and other natural scientists concerned by environmental degradation could see the need to connect with the social sciences even if this made them unpopular in their own fields (Røpke, 2004). The idea was that resource and environmental economists, or indeed any economists, were to be welcomed into a common movement because the environment was no longer on the political agenda as it had been in the 1970s. In Europe a wider group of political economists and social scientists was attracted in addition to the orthodox environmental and resource economists (Spash, 1999). The open door to all economists and indiscriminate approach was something described as transdisciplinary (Costanza, 1991) and pluralist (Norgaard, 1989). No unifying theory was then seen as possible or even desirable, no paradigm was to be put forth to replace the one deemed to be outdated but dominant (Costanza, 1996; Costanza et al., 1998; Norgaard, 1989; Turner et al., 1997). Ecological economics was instead a movement for expressing concern over environment-economy interactions with the potential for common cause to be expressed through shared concepts.

Yet, how the new field might proceed was unclear. Despite the transdisciplinary rhetoric, linking mathematical models was initially popular leading to an 'ecology and economics' multidisciplinary approach, especially in the USA (Spash, 1999). After all, ecologist and zoologist could be found using optimisation models which seemed similar to those of economists. For some, socio-biology (in the mode of Becker, 1976; Wilson, 1975) provided something of a precedent, despite the warnings that such approaches entail an unpalatable political economy (Gowdy, 1987). There was also lobbying in favour of reviving energy as a monistic unit of value to challenge money and cost-benefit analysis due to their lack of a link to physical reality. Again there had been stark warnings of the inadequacies of such an approach (Georgescu-Roegen, 1975). However, in the early 1990s, theoretical problems and political differences seemed less important than renewed engagement between

natural and social scientists working on environmental problems, and the prospect was of open acceptance of various disparate ideas without too much criticism.

A deep seated problem was left unaddressed. Economics has never been a unified field, so of what type of economics should ecological economics be constituted? High profile ecologists, amongst others, in the movement failed to recognise this issues or, if they did, dismissed the need to pay any attention to the core political, ideological and methodological divergences within economics (e.g., Ehrlich, 2008). There was apparently no recognition of the fact that mainstream ideas co-exist with a range of alternative thought (e.g. feminist, Marxist, post-Keynesian, critical institutionalist, evolutionary, Austrian) which contests its validity. Indeed, Norgaard's (1989) early argument for methodological pluralism was taken to mean all such divisions could simply be ignored.

This has become increasingly problematic because the current economic orthodoxy has an implicit ontology and advocates—though does not necessarily practice—a very specific epistemology and prescriptive methodology (Spash, 2012b). Teaching economics via mathematical formalism as an exclusive approach positively rejects deep reflection and questioning by bounding concepts within a narrow language of presumed logic and unwarranted objectivity. University exams in mainstream economics departments have increasingly required 'the' correct answer to 'the' model and so prevented teaching students how to question, analyse or think laterally, let alone show awareness that there might be other models or no appropriate model at all, and no correct answer! Those who independently posit such questions about inadequacies and alternatives will be ejected from the profession if they persist (Lee, 2009). Indeed, the aim of modern economic teaching has been to produce passive supporters for the economic institutions which hold power in society. That there are so many heterodox schools in economics is testimony to the frustration divergent groups feel

with this approach towards the discipline, but also to the power with which this orthodox approach holds sway.

These problems within the economics profession have had considerable impacts on the attempt to create interdisciplinary engagement and progress in ecological economics. One result has been on-going tension between calls for vision and innovation in ecological economics, and those for unity with or inclusion of neoclassical microeconomics and mainstream macroeconomics. More specifically, the impossibility of scientific progress in ecological economics has arisen because of the pretence that opposing ontological presuppositions and epistemological positions could be combined or at least held in conjunction.

3. A Movement in Three Camps: Divided Epistemological, Methodological and Ideological Positions

Elsewhere, I have argued for the rejection of unstructured and uncritical methodological pluralism and the rejection of orthodox economics as an informative school for the development of ecological economics (Spash, 2012b). Others are seemingly content to use orthodox economics in a totally uncritical fashion and see no need for the creation of a new paradigm or school of thought. They may make moderate or marginal changes but basically adopt the central tenets of mainstream theory and ideology; this camp I will term new resource economists. In contrast, those rejecting this route and calling for a new theoretical foundation for economics I refer to as social ecological economists (Spash, 2011a). A third group see no need for what they might term ‘theoretical pretensions’ of either sort and are happy to take a totally activist and campaigning approach to what they frame as environmental problems in search of solutions. They see such problems as requiring practical approaches, defined as those that they believe appeal to people in powerful positions (i.e.,

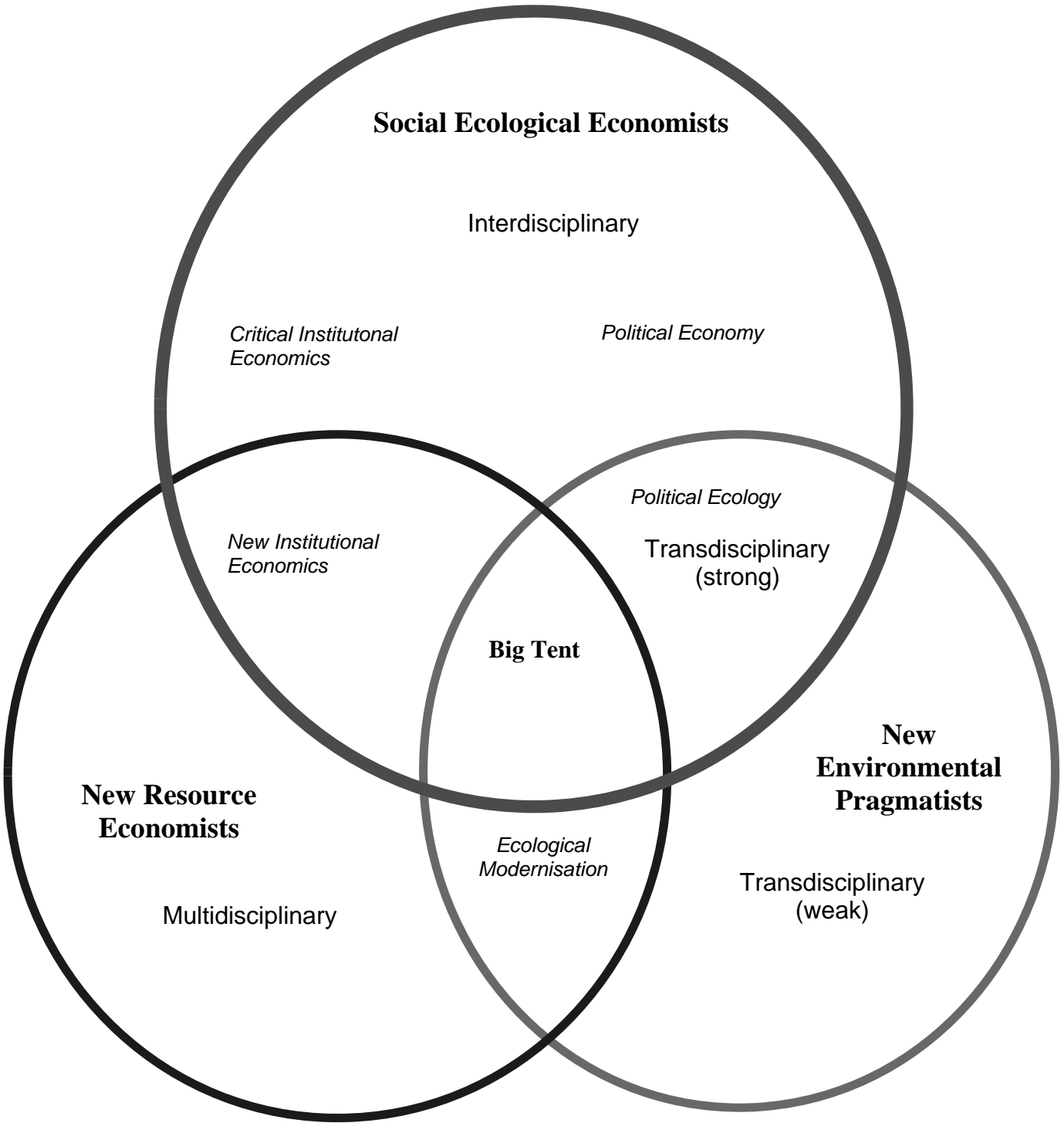
decision-makers) and the discourses they propagate. For this camp I will use the term new environmental pragmatists (Spash, 2009), which should not be confused with American Pragmatism. This last camp is specifically termed 'new' to avoid the potential confusion, and the distinction is further clarified next. These different camps, or groupings, are shown in Figure 1 and explained further in this section. In what follows I will outline key features of each camp in terms of theoretical (epistemological, methodological) and ideological positions and offer examples of work and ideas which fall within each of the categories.

(i) New Environmental Pragmatists

In philosophical terms American Pragmatism was a dominant school of thought in the United States of America during the early 1900s. It originated in the writings of Charles Sanders Peirce (1839-1914) and lectures of William James (1842-1910) and was most notably developed by John Dewey (1859-1952). However, it declined in light of the post World War II rise of logical empiricism. When this in turn declined, in the 1970s, interest in American Pragmatism and the writings of its originators re-emerged.

Peirce was a realist (i.e., believing a reality exists independent of the human mind) and saw truth as being discovered through experience (e.g., experimentation) and scientific discussion. As he stated:

"Different minds may set out with the most antagonistic views, but the progress of investigation carries them by a force outside of themselves to one and the same conclusion. ... No modification of the point of view taken, no selection of other facts for study, no natural bent of mind even, can enable a man to escape the predestinate opinion. This great hope is embodied in the conception of truth and reality. The opinion which is fated to be ultimately agreed to by all who investigate, is what we



mean by the truth, and the object represented in this opinion is the real. That is the way I would explain reality." (Peirce, 1878).

James had a rather different theory of truth as being what was most expedient or practical instrumentally. Dewey interpreted instrumentality rather differently than normal and held realist positions which led him to a strong naturalist philosophy in his later works (Godfrey-Smith, 2002). James, and Dewey (at one stage),^v maintained that an idea is true if, and only if, it can be successfully employed in the resolution of a problem in pursuit of human goals and interests (Field, 2005). There are strong consequentialist and empiricist elements in these positions.^{vi} This means such American Pragmatism must address the meaning of what are the practical consequences of believing something and what difference this makes to an outcome. That raises some difficult questions concerning which consequences are deemed important, for whom and to what end, and how we can know given strong uncertainty?

The tradition of American Pragmatism is philosophically and theoretically grounded, although its exact interpretation is disputed not least because of the differences between the founding members,^{vii} and the changes in Dewey's own philosophy over his lifetime (see Godfrey-Smith, 2002). In the context of ecological economics the American Pragmatist position has been represented and advocated separately and differently by Bromely (2008) and Norton (2003).^{viii} However, such disputes and differences are not so relevant here because this is not the type of pragmatism to which my category of new environmental pragmatism primarily refers.^{ix}

I wish to discuss a separate group of people who adopt a common pragmatism which is best regarded as distinct from American Pragmatism and which generally lacks any philosophical foundations. Those who fall under my category of new environmental pragmatism are focussed on pushing methods and concepts because they are deemed to be effective under current political conditions and economic institutions (i.e., those of neo-

liberalism and capitalism). These pragmatists want to sell their environmental message in an appropriately marketable form acceptable to political, business and financial elites, and in doing so buy into the methodology and ideology of commodifying, quantifying and pricing Nature. This form of pragmatic drive can be seen in a variety of work and use of concepts such as ecosystems services valuation, natural capital, Green accounting, carbon trading, and biodiversity offsets and banking (for further references see Spash, 2009, 2011b). There is no pretence within such work to be testing the validity of ideas in accord with any American Pragmatist, or other, philosophy of science; concepts, methods and results are instead advocated as politically useful and rhetorically justified as such. Rather than seeking scientific understanding or empirical validity the aim is political validation, i.e. success is to be measured by political reaction. The people who appear to be taking this position most strongly are not philosophers of science but rather environmentalists, environmental scientists, conservation biologist and ecologists.

Indeed, new environmental pragmatism uses a non-philosophical discourse of self-justification embedded in everyday language. In common usage the word pragmatism refers to dealing with things in a way that is based upon practical as opposed to theoretical considerations. However, it can easily go beyond this to emphasising what is most expedient, downplaying process and dismissing anyone expressing concerns which can be classified as too abstract, idealist, romantic, utopian and so on. On these grounds the new environmental pragmatist can justify what they may know lacks any theoretical basis, or scientific validity, by appealing to a claim of something being potentially practically useful in achieving a goal. In rhetorical terms, not being pragmatic is regarded as being impractical, which is a derogatory classification implying a person or their ideas should be dismissed as politically unrealistic, bad or even stupid. The new environmental pragmatist then employs doublespeak

as they claim to be operating in 'the real world', while in fact refusing to address the complexity and meaning of social and political reality.

The type of work carried out by new environmental pragmatists could, I contend, easily be rejected by many American Pragmatists. Thus, Norton, for one, is highly critical of monetary valuation work on ecosystems in ecological economics. He has stated that he,

"as a philosopher, was attracted into the fringes of the discipline of ecological economics by the possibility of finding a community of scholars who were seeking a new way to conceptualize and count the impacts of economic and policy decisions on ecological systems and processes. But we hear less and less discussion of these *deep issues* as ecological economists have embraced quantitative analysis of non-market values and ecosystems services as the means to identify, monetize, and count environmental values in virtually every circumstance and context." (Norton and Noonan, 2007: 665, emphasis added)

He is specifically critical of the work by such new environmental pragmatists as Costanza et al. (1997) and Daily (1997) for placing theoretically unjustifiable monistic money numbers on Nature under the concept of ecosystems services. This is seen as resulting from use of a short cut method of creating dollar values because ecologists were frustrated by adherence to economic theory and so recommended relaxation of the strict rules of valuation under environmental economics. As Norton and Noonan (2007: 669) summarise: "Advocates of this approach measure, by whatever means available, the economic impacts of various ecological processes and outcomes on human well-being."

For new environmental pragmatists, social science methodology and theory are largely irrelevant because the aim is to get communicatively powerful statements of why everyone should be paying more attention to environmental problems. However, this is not totally divorced from the attitude of some who have appealed to American Pragmatism while

demanding immediate workable solutions to environmental problems regardless of theory. For example, Light and Katz (1996: 4) state: "Pragmatists cannot tolerate theoretical delays to the contribution that philosophy may make to environmental questions". The problem with such intolerance is the potential for a lack of attention to epistemology and dismissal of theory leaving policy recommendations totally unhinged. Presenting theory as secondary to and disconnected from practice seems to misconceptualise the motives and justifications for action. In criticising this approach, Proctor (1998: 367) notes that theory is necessary to inform understanding of actual events and in making critical appraisals of what is a workable approach to environmental problems. Following this reasoning, I would therefore categorise the position of Light and Katz as consistent with new environmental pragmatism. So, while I wish to maintain new environmental pragmatism as distinct, some who appeal to American Pragmatism might well fall within the new environmental pragmatist camp.

The distinguishing feature of new environmental pragmatism is the lack of concern for theoretical rigour, especially in the social sciences, and prioritising of methods to achieve supposed 'solutions' on purely instrumental grounds. Indeed, the approach can be seen as regarding environmentalism as a practical problem solving activity, not a fundamental critique of the dominant structure of political economy and its treatment of human relationships with Nature. Here I am thinking in particular of the work on ecosystems services valuation and valuing the world (or parts thereof) using the crudest forms of benefit transfer. The approach of new environmental pragmatism can also be regarded as prevalent more broadly. It is evident in environmental non-governmental organisations linking with corporations (Anshelm and Hansson, 2011; van Huijstee et al., 2011). It has also spread to international agencies, e.g. the United Nation's advocacy of a Green economy (Spash, 2012a), and sponsorship of work on the economics of ecosystems and biodiversity (Spash, 2011b).

These projects have included ecological economists (e.g., TEEB, 2010), and/or referenced their indebtedness to ecological economics (UNEP, 2011: 2).

As mentioned, a major faction employing such new environmental pragmatic justifications appear to be coming from outside economics and within the natural sciences (e.g. ecologists and conservation biologists). They may be motivated by a variety of arguments including: the view that this is necessary to be effective politically, that there are no better alternatives, that this is how things should be done, that this is the way to produce the best outcomes (Spash, 2008b). Typically, as currently being practiced, new environmental pragmatism is about recommending monetary valuation and supporting a neo-liberal market approach for environmental policy.^x This may be undertaken with reluctance or be ideologically motivated. Regardless of motivation, a range of work led by non-economists seems to fit, including that of Costanza et al. (1997) on valuation and natural capital, Daily (1997) on ecosystems services, Balmford et al. (2002) on conservation, Walker and Pearson (2007) on resilience.

Yet, new environmental pragmatism may also exist beyond the straight forward drive towards markets and commodification. Work by Wackernagel and Rees (1997) on ecological footprints might then qualify, because it's land theory of value is implicit and its problems seem neglected due to the importance given to achieving political impact regardless of issues such as incommensurability. Then there is the work of Walters and Holling on adaptive management which also does not plump for monetary valuation. For example, after doing some promotion of objective scientific and Bayesian approaches, to the management of uncertainty, Walters and Holling (1990) admit a more political agenda is relevant along with the broader context in which knowledge operates when dealing with policy problems. They state that “policy is politics” and argue that acceptability amongst scientists, government and the public of explanations for action can occur regardless of whether scientific uncertainty is

high. So now they are arguing, contra themselves, that objectifying, reducing and resolving uncertainty is not the only or even the key aspect for management. As they state: “decisions are not made because of a well-proofed argument in the tradition of experimental science, but because of the accumulation of credible evidence supporting a simple and widely perceived explanation in a political environment that demands action.” (Walters and Holling, 1990: 2067). The message is that, if you want policy impact then provide simple explanations that have political credibility.

Once again, this might come close to some forms of American Pragmatism, such as advocated by Bromley (2008), in that creating 'useful' knowledge (not truth) is the aim and this knowledge is regarded as a belief created by a group about what is useful. This correspondence might be further supported by noting that Norton, an avowed American Pragmatist, has adopted Walters and Holling’s concept of adaptive management (see Norton and Steinemann, 2001). Yet, the distinction I want to maintain here is actually reinforced by the above examples because there is a difference between philosophically grounded American Pragmatist positions and the apparently uninformed new environmental pragmatist positions. There is no suggestion here that Walters or Holling have any connection with, any interest in or knowledge of American Pragmatism. The appears true of the others cited above. More specifically, those producing and/or making use of monetary values, as some representation of environmental values, appear motivated by delivering results they believe will be readily accepted by dominant political and business institutions, and not due to their adherence to a specific philosophy of science.

Such new environmental pragmatism is, I believe, widely spread and evident across support for a whole range of current policy initiatives. This might help explain the dominance of mainstream approaches and lack of critical coverage of economic work on human climate change evident in *Ecological Economics* (see Anderson and M'Gonigle,

2012). For example, people who otherwise reject cost-benefit analysis might feel the Stern report should go uncriticised by ecological economists because the authors are raising the policy profile of the issue. After all, goes the logic, this was a political project commissioned by the UK Treasury and led by an establishment economist (former chief economists at the World Bank), and yet it seemed to be agreeing with environmentalists and ecological economists on the need for urgent action. The failure of such (new environmental) pragmatic reasoning became evident when the Stern report was used to justify shadow pricing of carbon to support London's airport expansion plans. For example, the airport expansion policy raised concerns over valuing loss of life in other countries as monetary sums—implicit in carbon pricing—and then writing this off because millions of busy airplane passengers might save some travel time. The balance sheet is one showing the potential for dead people in Bangladesh, India and China, due to climate change, outweighed by the jetting classes having a few more minutes each, say to be spent in front of a TV in a hotel room, on a beach or going shopping. Rather late in the day some of those who formerly were supportive started to question the work by Stern et al.^{xi} Such is the direction in which new environmental pragmatism can lead us.

When people, recognised and cited as ecological economists, started valuing the world's ecosystems as a sum of money, criticism was similarly deemed a failure to understand the political reality and how helpful were these large imaginative numbers (e.g., 33 trillion US dollars per annum Costanza et al., 1997). Yet, the unforeseen consequences of ecosystems services valuation has been to give new life to the use of monetary valuation and stated preference methods in ever broader and more aggregated contexts, countering moves towards public participation and removing the need for multiple and incommensurable criteria to be taken into account. Government agencies can take a much simpler approach and hire pragmatic ecological economists to add-up some money numbers, transferred out of

spatial and temporal context, rather than getting into the real social and political complexities of ecosystem management and community decision processes (Spash and Vatn, 2006). As a result the discourse over ecosystems and biodiversity loss is increasingly in terms of monetary value and the 'solutions' involve the spread of neo-liberal markets (Spash, 2008b, 2011b). Something similar is afoot with climate change and carbon markets (Spash, 2010).

While new environmental pragmatism, as described here, is therefore a largely negative and shallow approach this should not be taken to imply philosophical American Pragmatism is necessarily tarred with the same brush. For example, seeing the need to take into account the experiences and contributions of others leads to value pluralism. This might be extended to identifying what has practical consequences via participatory deliberation. Thus, American Pragmatism has been associated with the approach of Habermas (Festenstein, 2009; Field, 2005), who has developed a theory of discursive ethics and of seeking truth via participatory democracy (e.g., Habermas, 1984). The approach of Habermas has connections to the philosophical writings of Peirce (Norton, 2003: 279). In ecological economics there have been calls for discursive ethics (O'Hara, 1996), and for approaches paying attention to participation, value pluralism and value articulating institutions (Lo and Spash, 2013; Vatn, 2005). In summary, my point in designating a group of work as new environmental pragmatism is to separate out the approach taken by those ecological economists concerned primarily with political impact regardless of the means by which this might be achieved.

(ii) New Resource Economists

There are those who regard ecological economics as nothing more than some sub-field of neoclassical economics, without which they feel there is no theoretical foundation. For example, Nijkamp (2005: 134) has stated: "A clear foundation in standard economic

(including neo-classical) principles and models might prevent a loose orientation. After all, ecological economics is about economics!". Apparently ecological economics is then meant to be theoretically grounded in orthodox economics. This is actually the kind of conformity which Norgaard's (1989) appeal for ecological economics to adopt methodological pluralism was meant to avoid. However, the creep of the neoclassical and orthodox economic tradition into the movement is evident far and wide.

Consider, for example, the main textbooks. In Common and Stagl (2005) we find advocacy of a utilitarian approach framed within a fact-value (positive-normative) dichotomy and backed by a methodology of verificationism and mathematical formalism. In Daly and Farley (2004) the core argument is about addressing scale and equity, but then allowing markets to run freely within these constraints in order to achieve the traditional economic goal of efficiency. Both seem to accept the basic price theory of mainstream economics and much else. Perhaps this is not surprising given the logic that market systems are basically only in need of a few (biophysical and social) side constraints, while humans only need to be nudged in the right direction and provided with the right technology to make markets work for the common good. Alternatives to the utopian free market system are not then on the agenda, while fundamental structural problems appear irrelevant. Indeed, Daly (2010) has confirmed his "preference for the market over centralised planning" and faith in "ecologically and socially constrained markets" as the best means for achieving allocative efficiency. He has long been an advocate for tradable permits markets, even for the allocation of rights to give birth (Daly, 1974). Some resource and environmental economists also feel Daly's position is close enough to their own to claim him and ecological economics as a sub-field (for example see Auffhammer, 2009: 259).

Meanwhile van den Bergh (2010) equates environmental problems and sustainability to simply internalising externalities, as if markets would then be optimal resource allocators and

indeed as if externalities were some minor aberration on an otherwise perfectly functioning system. What van den Bergh (2010: 2049) advocates, to analyse spatial sustainability, is an integration of "insights and approaches from economic development theories, international trade theory, urban/agglomeration economics, and environmental and resource economics". He even criticises Daly and claims mainstream economic approaches (such as emissions trading) already address economic scale issues. As he states: "So traditional (environmental) economics really does address the physical scale of the economy, and the gap between mainstream and ecological economics is not as wide perhaps as some tend to think" (van den Bergh, 2010: 2051).

The blurring of the lines as to what is distinct about ecological economics is also something continually repeated in this journal. For example, recent claims by Silva and Teixeira (2011) that ecological economics is now a post-normal science appear based upon the antithesis of the post-normal philosophy (e.g., the spread of mathematical formalism, abstract expert modelling, and low quality uncritical monetary quantification). Similarly, we find the field being redefined by the citations analysis of Hoepner et al. (2012) as being no different from and perhaps a branch of the orthodox sub-disciplines agricultural, resource and environmental economics (see critique by Spash, 2013).

Orthodox economics maintains a strong, if implicit, ideology. That is a core faith in market-based systems as the best means for the delivery of democratic and free societies. This is often combined with a faith in, problem solving and life enhancing, new technology which is expected to be stimulated through market pricing. Thus 'getting the prices right' is the key way forward, rather than direct regulation of behaviour or structural change in social and economic systems. Within orthodox economics the nature of political economy is not regarded as in need of explicit attention, nor even of any relevance, but simultaneously the implicit faith in market systems as delivering freedom for individuals to fulfil their

preferences makes for an easy alliance with neo-liberal politics. New resource economics is then also embedded within free-market ideology and mainstream price theory.

What is new in the new resource economics position is the priority given to issues of ecosystems functioning. Efficiency is then no longer enough to achieve a prosperous future and concepts such as sustainability and resilience have been identified as needing to be added as independent goals (Common and Perrings, 1992). The focus is on how to include ecosystems functions in economic models and use them to derive insights into the operation of linked ecological-economic systems. However, the goals remain efficient and optimal resource use. The reinvestment of rent from natural resource extraction and exploitation is the favoured approach for evaluating the sustainability of economic systems (i.e., the so called Hartwick rule). Theoretical resource modelling is emphasised over applied valuation and there is deep scepticism of work to value the environment outside of existing market structures.

In terms of methodology, the key approach is to use mathematical formalism to create abstract models which are then meant to explain aspects of reality. This follows the flawed mainstream approach of equating such deductive mathematical formalism with rigour and objectivity, something not even correct in the field of mathematics (Dow, 2003). There is then a strong link to a natural science based methodology and a rhetorical use of references to testing theories empirically and using models for prediction.

Consistent with this approach in ecological economics is the work by Perrings (1997, 2006), a former ISEE President. For example, he accepts market prices as valid indicators of value while questioning stated preferences and benefit transfer and preferring production function analysis. He has an allegiance to the strong hidden ontological presupposition of mainstream economics and its prescriptive mathematical methodology. For example, he accepts that willingness to pay for species at top trophic levels can be used to infer the value

of the constituent parts (e.g. species) at lower trophic levels, which reveals a belief in atomistic reductionism. He adopts utility maximising models and seeks optimal solutions. He regards the main challenge for achieving sustainability as being to develop predictive models for evaluating the pay-off from policy choices. Challenges posed by globalization and climate change are to be addressed by better models to significantly improve the capacity of resource managers. His vision for ecological economics is of a basically objective predictive science with a monist methodology of mathematical formalism. As he has stated (Perrings, 2006: 19):

"My own view is that ecological economics has an obligation to develop the science needed to understand, model and predict the dynamics of coupled ecological-economic systems. Indeed, it is the *raison-d'etre* of the field."

Clearly, from this perspective, ecological economics is not then a particularly radical departure from orthodox economics. Thus, mainstream economic conformists, Karl-Goran Maler, Partha Dasgupta, Kenneth Arrow, Geoffrey Heal and David Starett have comfortably allied themselves with ecologists Brian Walker, Paul Erlich, Gretchen Daily, Simon Levin and engineer/climatologist Steven Schneider. Their methodology is mathematical formalism and linking models. Such alliances have been strongly supported by the Swedish Beijer Institute and its ecological economics programme. These prominent academics bind their combined worldview in neoclassical assumptions, and appear happy to support an orthodox economic approach, where 'getting the prices right' is the central problem facing humanity (Arrow et al., 2004). Similarly, there is then no surprise that other Beijer Institute related academics Turner, Perrings and Folke (1997: 27) "do not see ecological economics as an alternative paradigm". Indeed, they regard it as merely offering a different perspective, and one which is closer to renewable resource economics than environmental economics.

(iii) Social Ecological Economists

Resource and environmental economists have long investigated the market system with an ideological perspective embedded in a methodology unable to question consumer sovereignty, corporate structure or power politics, let alone understand human psychology or how markets actually operate (Kapp, 1950). The social ecological economics position is therefore distinct, from the other two main camps, in aiming to address these fundamental critiques of the existing economic orthodoxy. Ecological economics is placed within the context of heterodox economic schools of thought (Gowdy and Erickson, 2005b; Spash, 2011a; Spash and Ryan, 2012) and the discontent with the orthodoxy is consistent with calls for a revolution in economic theory (Gowdy and Erickson, 2005a) or a paradigm shift (Illge and Schwarze, 2009).

There is a distinct realist element to social ecological economics. This can be seen in criticism of orthodox economists as not facing the evidence of their own irrelevance to modern economic systems. Gowdy and Erickson (2005a) note that work by Georgescu Roegen, going back to the 1930s, stressed that consumer theory should be consistent with actual human behaviour and production theory should be consistent with biophysical laws. Part of this realism is to reject the atomistic reduction of wholes to parts. That is, for example, to accept society is different from a collection of individuals just as ecosystems are more than a bunch of species or an animal just genes. The realist aspect does not totally exclude social construction but highly limits its role and excludes relativism. Neither does it mean we can know for certain what is true (i.e., it accepts fallibilism).

Consistent with this approach, Vatn (2005) explains the objective elements in the social and economic spheres as being represented by (i) the ability to evaluate and discuss collectively created institutions, and (ii) the independent existence of the social world. While we are a part of that social realm, its independence means social facts can be observed and

studied. He notes the consistency of position (i) with critical realism. There is allowance for cultural variation and so constructivism although this is also tempered by recognition of common and universal human needs, so that social construction does not imply relativism. In ecological economics such needs might best be summarised in accord with Max-Neef's (1992) system of needs and satisfiers.

Another aspect of social ecological economics is the acceptance of the ever changing world in which we live rather than pretending there is stability and equilibrium. This is clear for ecosystems from the work by Holling (1986). Holling et al. (1995) suggest economists should learn from ecologists about the aspects of ecosystems upon which the economy depends. Specifically they note such things as episodic not gradual change, non-linearity in spatial scales, absence of equilibria, destabilising forces, uncertainty and unpredictability. In social and economic systems such features and their comprehension are highly relevant for understanding the modern environmental predicament and the failure of orthodox economics (Spash, 1999). Others have emphasised the importance of the co-evolution of social, economic and natural systems (Gowdy, 1994; Kallis and Norgaard, 2010; Norgaard, 1994), and complexity leading to recognition of emergent properties (Kay et al., 1999). Links might also be made to the field of evolutionary economics. This traces back to a foundational article by Veblen (1898) and hence is also associated with critical institutional economics, which is another concern of social ecological economists (Spash and Villena, 1998, 1999; Vatn, 2005).

In social ecological economics, the understanding of uncertainty borrows from a range of sources including post-normal science (Funtowicz and Ravetz, 1994), the sociology of science (Wynne, 1992), the concept of ignorance (Loasby, 1976) and Keynes' ideas on probability (Keynes, 1988 [1921]). Partial ignorance and social indeterminacy are contrasted with risk and probability assessment, i.e. strong versus weak uncertainty (Spash, 2002). The

inherent unpredictability of the future means rethinking approaches and being more humble than those who claim they can develop predictive models and estimate the probabilities of future world states.

In terms of epistemology there is an acceptance that theory in the social and natural sciences can be used as a means to explain and describe the world, not just as a predictive device. That means a role for historical descriptive analysis. Accepting that there are multiple perspectives on environmental problems means accepting value pluralism and the role of different quantitative and qualitative (i.e., plural) methods in the formation of knowledge. Value pluralism also means being aware that utilitarianism is a very specific ethical system, that instrumentalism similarly is a restricted position and that we should expect value conflict as a standard occurrence. This is why critical institutional approaches are required along with addressing power relationships and direct consideration of the ethical basis for economic and public policy. This also links into small group participation and deliberative valuation, as well as more general issues of political science, governance and democracy (Lo and Spash, 2013; O'Hara, 1996; Spash, 2007a, 2008a). Methods which can handle incommensurability of values, while probing and making explicit value differences, are necessary, e.g., disaggregated multi-criteria analysis and multi-criteria mapping (Martinez-Alier et al., 1998; Munda, 2004; Spash et al., 2005; Stagl, 2007; Stirling, 1997; Stirling and Mayer, 2001).

The approach is inherently interdisciplinary linking economics with a range of academic disciplines such as social psychology, sociology, applied philosophy, geography, politics and the natural sciences. The potential for ecological economics is then in terms of developing as a progressive social and environmental movement conducting interdisciplinary research. I use the term interdisciplinary explicitly because it avoids the potential for an

approach skating over the content of other disciplines, as too often seems to arise under references to transdisciplinarity as employed by new environmental pragmatists.

Some may object that transdisciplinarity has much to offer, beyond the typical hand waving exercise I am associating with new environmental pragmatism, and this is true. In the Germanic use of the terminology an interdisciplinary approach combined with public participation, of the sort advocated by post-normal science, would be termed transdisciplinary (Luks and Siebenhuner, 2007). On this basis interdisciplinarity does not exclude transdisciplinarity but rather sees it as an extension of interdisciplinarity endeavour which involves two way knowledge communication and creation in the context of wider society (beyond the experts). What is not possible is to have transdisciplinarity without taking interdisciplinary knowledge integration seriously, and so this is more foundational and fundamentally important. There is then a difference evident in the use of terminology and emphasis between the core of new environmental pragmatism and the core of social ecological economics. In the former the term transdisciplinary is more often an excuse for not engaging, in any detail, with the theory or substance of disciplines claimed to be relevant. A distinction, shown in Figure 1, is therefore between this weak transdisciplinarity as opposed to the Germanic type of approach, building from interdisciplinarity, which is termed strong transdisciplinarity.

In addition, interdisciplinarity emphasises the need for theoretical development and interaction between research fields. Pluralism within the economic element is given structure through links across heterodox economic schools including the: critical institutional, evolutionary, feminist, neo-Marxist, psychological, Post-Keynesian, critical realist and social.^{xiii} The ideological drive is to address issues of ethics, injustice and social inequity inherent in current environmental problems with a recognised need for fundamental changes

in the structure of economic systems and human behaviour, not merely problem solving. A key to that end is seen as changing the ideas and conduct of economics itself.

(iv) Intermediate and Crossover Positions

As illustrated in Figure 1, the three main positions can be supplemented by combinations giving a further four possibilities. In practice there appears to have been some combination of new environmental pragmatism with new resource economics. As noted above, for example, a group of ecologists, who appear in the former category, have associated themselves with mainstream economists, from the latter category, and formalised this association within the Swedish Beijer Institute. Elsewhere, the crossover between the new environmental pragmatists and new resource economists is one which might come close to a form of ecological modernisation.^{xiii} That is, a combination of faith in market based systems allied with a pragmatic justification for appealing to corporate social responsibility and self-regulation. The outcome of this crossover seems likely to result in no serious economic or political reform while spreading the rhetoric of mainstream economic discourse.

More generally, mainstream economists maintain the ability of their approach to take on various aspects of the critique posed by others and assimilate them, e.g., neuroeconomics, behavioural economics, game theory, complexity economics, and so on. Others see little substantive progress in such assimilation. In this respect institutional economics provides an example. Here there is a mainstream version focussed on transactions costs and a heterodox version which is much broader and rejects the mainstream approach (e.g., Söderbaum, 1990) or at least sees it as highly restricted. From this perspective new institutional economics is a rejection of integration and a narrowing down of alternative thought. Similarly, behavioural economics as employed by mainstream apologists adapts ideas and squeezes them it into a predefined model of human behaviour which fits within the fundamental structure of

microeconomic theory. Earl (2005) describes the approach as a type of economic imperialism and differentiates it from changing the approach of economics on the basis of psychological insights. Lawson (2009) argues that the problem revealed by the mainstream is due to its insistence on only seriously considering ideas if they can be placed within the frame of deductive mathematical formalism. Indeed, he states that: "The mainstream abuses formalism by repeatedly using it in situations in which it is inappropriate to do so, failing to seek to understand its scope and limitations." (Lawson, 2009). New resource economists and social ecological economists are then expected to be at odds, as will be explored further in the next section.

The area joining social ecological economics and new environmental pragmatism is one where pragmatism tempers the theoretical rigour resulting in a willingness to entertain a range of political compromises. For example, some here might argue for acceptance of the 'usefulness' of theoretically ungrounded monetary valuation according to context. Those in this crossover area may also show a stronger concern for power relations and politics. This might appear as being allied with eco-socialist and/or eco-feminist perspectives. The pragmatic influence here would then lead towards a more activist approach, challenging rather than enforcing the capitalist patriarchal system.

While I have argued for keeping American Pragmatism as a separate category from new environmental pragmatism, there may, as noted, also be some blurred lines and fuzzy boundaries. That is, as we move away from new environmental pragmatism towards social ecological economics the potential for a theoretically well founded influence of pragmatism rises. Clearly some aspects of American Pragmatism closely align with social ecological economics. The potential feed in to deliberative democracy and value articulating institutions has already been mentioned. There is Dewey's emphasis on the evolving and ever changing world combined with fallibilism and rejection of a fact-value dichotomy, all of which

corresponds with recognition of strong uncertainty and its implications. Strong transdisciplinarity might then be advocated from both positions. Yet, any exclusively consequentialist perspective, applied to what is to be judged as valid knowledge, seems problematic. At the same time the hierarchically structured ontology of ecological economics appears at odds with such American Pragmatism or at least points to divisions within that school of thought. Part of the issue here is what is understood by stating that a group reaches consensus on reality. This might mean consensus is determined by an external reality on which the group converges (Peirce's position cited earlier), which would align with the type of empiricism and realist position I have argued for in ecological economics (Spash, 2012b), and which underlies social ecological economics. Alternatively, it could be taken to mean whatever the group agrees upon is now accepted as being real for the time being, which is a strong social constructivist position that seems inconsistent with how ecological economists address the world. So the potential for interaction with and integration of aspects of American Pragmatism by social ecological economists remains an open question.

4. Unity and Division

Ecological economics as the maintenance of a “big tent” for all to enter was advocated by Howarth (2008) as the incoming editor of *Ecological Economics*, and can be seen as close to Norgaard's (1989) call for unstructured and uncritical plurality amongst methodologies. In Howarth's opinion “ecological economics is a transdisciplinary field that is defined by a set of concrete problems rather than a particular epistemology or methodology.” While recognising the need for interdisciplinary research and integration, he wants to avoid creating “a narrow domain characterized by an exclusive or dominant viewpoint”.

Several other authors have discussed the potential for cooperation between ecological economics and resource and environmental economics. There are those who tentatively

propose that bridges might be built despite recognition of fundamental differences and the need for ecological economics to create a paradigm shift (Illge and Schwarze, 2009). There have been calls for synthesis of resource and environmental economics with ecological economics and industrial ecology under a new title "Natural Economics" (Ruth, 2006). Then there is the more recent call for a joining together under the title of "Sustainability Economics" in order to repair the "unfortunate divide between ecological economics and environmental and resource economics in the study of sustainability" (Baumgärtner and Quaas, 2010: 449). Elsewhere, Baumgärtner et al. (2008: 385) have defined the central aim of ecological economics as the management of sustainability; so "Sustainability Economics" then appears to be an unneeded rebranding exercise of the research already on-going within ecological economics. These calls for unity and /or union seem to rather gloss over the fundamental ontological, epistemological, methodological and ideological reasons for the division from orthodox economics occurring in the first place (Spash, 2012b).

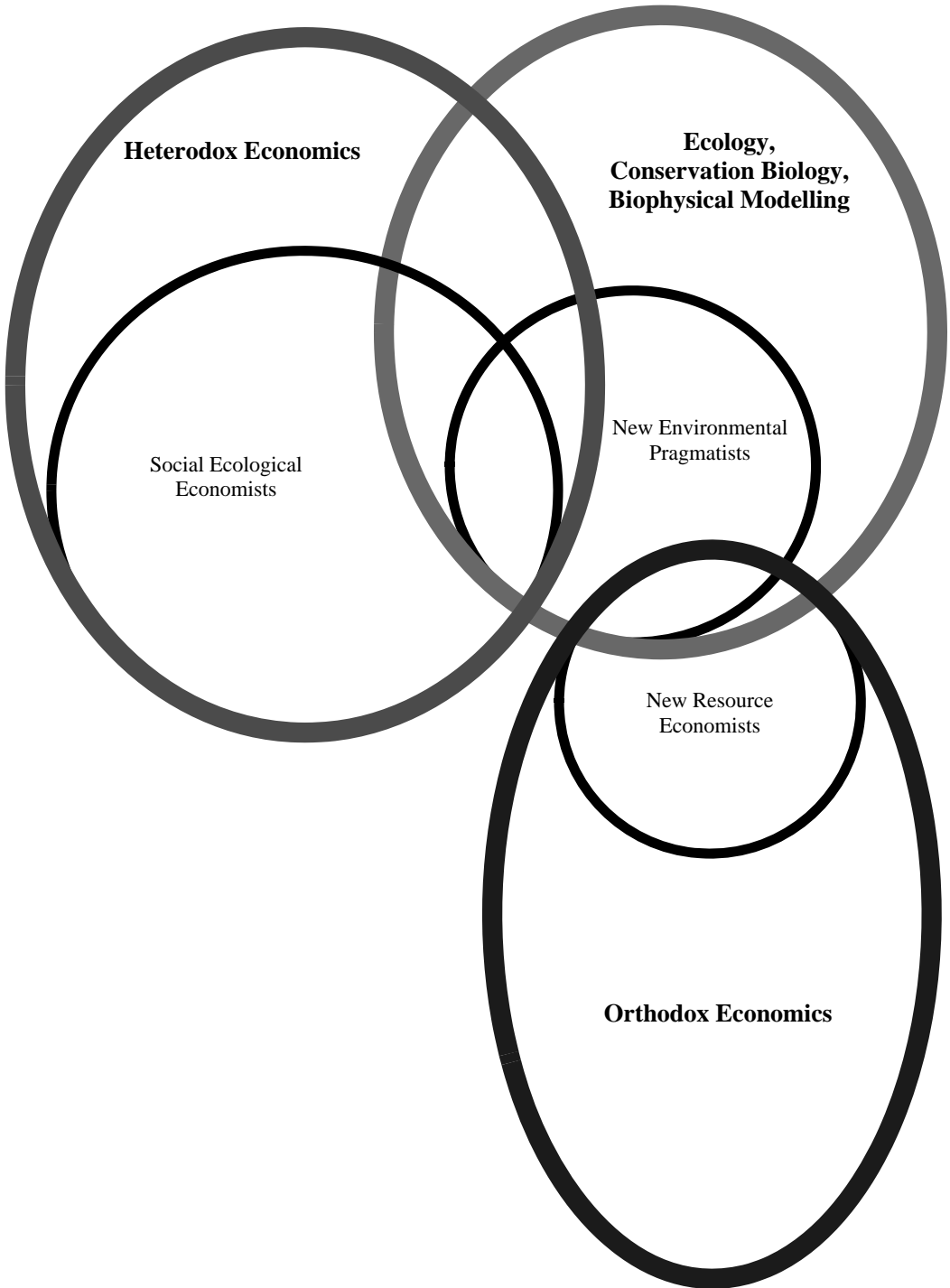
Nelson (2009) puts forward a more interesting position in arguing against divisions and apparently in favour of the "big tent". Her position appears to call for a unity of understanding which combines what she refers to as the hard and the soft in the broader field of research on economics and the environment. So we might see hard core neoclassicals, neo-liberals, free marketers and economic modellers joining with her soft socialists, Marxists and anti-market environmentalists. Actually rather than expecting such divided social groups might combine in a "big tent", and get along with each other, she is arguing for a more subtle change in epistemology which would make these groupings in effect no longer exist. That is, if knowledge were not seen as purely, say, empiricist nor purely, say, metaphysical, then a new approach to understanding knowledge would arrive, requiring the extremists to change. She is calling for the individuals holding antagonistically opposing positions to change their modus operandi, indeed their mind-set, and so become different individuals with a more open

and encompassing acceptance of knowledge, which is seen and described as being more in touch with reality. Indeed her reflections upon reality are used to criticise others for not taking a more unified approach.

This type of transformation is indeed what is required for progress—Arnae Naess might have also agreed—but that does not equate to accepting the current models and methods of orthodox economics in parallel with those from other disciplines. In fact, the argument from social ecological economics is that looking to heterodox economics and other social sciences is the best way to proceed in creating a positive personal and disciplinary transformation. If a new epistemology is required then it must be a break from the past and those groups which defend the old order. There are good reasons why this should also be a break and not an ever persisting party of antagonists in the big tent. A new preanalytic vision will not be sustained by those with opposing ideological positions or those who maintain a conflicting ontology (explicitly or implicitly).

This argument means that in practice there is no "big tent" or possibility of unity between neoclassically committed new resource economists and social ecological economists. They are by definition separate groupings. So areas in which merger and links are sought can only be illusory. Like a mirage they offer nothing of real substance and soon disappear. In this case Figure 1 would need to be redrawn as Figure 2, where these two camps are divided by being embedded in heterodox and orthodox economic approaches. The only means of a bridge is then provided by the new environmental pragmatists who, by definition, pay little or no attention to theory and/or accept any instrumentally effective alliance.

An example of how new environmental pragmatism might provide such a connection is the Index of Sustainable Economic Welfare (ISEW) developed by Daly and Cobb (1989). The authors now admit this index was never meant to be taken as a target or an end in itself,



Heterodox Economics

**Ecology,
Conservation Biology,
Biophysical Modelling**

Social Ecological
Economists

New Environmental
Pragmatists

New Resource
Economists

Orthodox Economics

but rather to show why such accounting measures fail to address the authors' deep concerns for community. However, Daly and Cobbs' deep concept of 'person in community' is hardly ever mentioned in the literature, despite this being the main topic of their book in which the ISEW first appeared as an appendix (Daly and Cobb Jr, 1989). Instead, the shallow concept of the ISEW is widely quoted and employed (Ziegler, 2007). So, the pragmatic tendency overrides the deep concern and ends in providing new resource economists with another shallow accountancy tool.

5. Conclusions

I have put forward the characterisation of three main alternative camps and outlined their positions. This has been used to illustrate the on-going struggle within ecological economics, and more generally society, over the best way to address the complex of social and environmental problems in the world. I have suggested how these positions might be combined producing further possible groupings, although I also note the possible contradictions and conflicts inevitable in holding some such combinations. At the same time, a simple, if crude, contrast between shallow and deep positions can be useful for indicating what is wrong with ecological economics.

For Arnae Naess (1973) shallow ecology could be summarised as a fight against pollution and resource depletion which had a central objective of health and affluence for the 'developed countries'. It was preoccupied with instrumentality and the reduction of everything to material and energy flow accounting and functional usefulness for human ends. The shallow ecological economics movement shares something of this perspective but combines it with a sophisticated rhetoric of concern for 'other things'. The many other things might include social justice, poverty, treatment of non-humans, democratic process and so on, but such things are either the subject matter for someone else or things to be dealt with later

by 'further research'. The aim of a deep social ecological economics position is to make ethical conduct central and to place the social, ecological and economic discourses on an equal footing.

The unquestioning use of monetary values and adjusted national income numbers have formed the flagship of the shallow ecological economics movement and made it some powerful allies. Power for 'the message' was what ecologist sought and having found a means to get attention why give up now? Unfortunately, like the hapless characters in Douglas Adams' novel "Hitchhikers' Guide to the Galaxy", having found the answer to 'life the universe and everything' encapsulated in a single number the realisation is dawning that this lacks any meaning. Still more like those characters, the number crunchers have created a whole industry in speculating as to how 'the number' might be interpreted, and how different means of calculation could produce an even better 'ultimate answer'.

Ecologist then have employed cost-benefit tools in ways practicing environmental economist would never have dared to do. Valuing ecosystems at highly aggregated levels, transferring whatever numbers come to hand across time and space, and implicitly advocating the spread of pricing and markets to all aspects of environmental management. This has in turn emboldened and reinvigorated resource and environmental economists, who may basically follow the same approach while sniping at the poor conduct of the ecologists and others. Calling on theory, they can recommend how these things should be done properly by serious scientific economists, not campaigning environmental pragmatists. At the same time they have not been averse to publishing their own lesser and/or theoretically ungrounded works in *Ecological Economics*, which has a higher impact factor than most economics journals. This is why, for social ecological economists, the journal has for sometime had the appearance of being a dumping ground for second rate and duplicated papers from agricultural, energy, resource and environmental economics. Unfortunately, all the

approaches and factors currently making ecological economics a shallow movement have also led to a muddying of the waters and loss of sight of the original objectives.

Shallow ecological economics as pushed by new resource economists offers little which has not been on the agenda of resource and environmental economists working within the current economic orthodoxy. It does not provide a useful tension between alternative viewpoints which is stimulating discussion and leading to progress, a new synthesis or a transformation in thought. Instead it provides a powerful dominating force which leads to control, marginalisation and suppression of more radical and alternative ideas. Moving away from the orthodoxy is necessary to nurture the social ecological economics agenda. Deep ecological economics requires challenging both personal and social pre-conceptions, while taking a campaigning spirit to change public policy and the institutions blocking the necessary transition to an alternative political economy.

Shallow waters, close to shore, appear to offer relative safety and security. You can quickly escape to dry land, and you can chose to be where there are plenty of others around, in case you get into trouble. Yet, the shallows are where you run aground and get shipwrecked. Once you learn to sail, shallow waters soon appear more dangerous than the depths of the open sea. Deep waters are also much to be preferred when riding-out a storm.

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- ⁱ I refer to ecological economics as a movement or field to cover the various descriptions given by authors, including: discipline, school of thought, paradigm, emerging paradigm, transdiscipline and perspective.
- ⁱⁱ The mystical overtones of deep ecology might be attributed to it by some because of its philosophy of self awareness or ecological consciousness which appears more Eastern than Western in philosophical terms. This means harm to the environment is seen as harm to a broadly constituted self, or at least personalised due to achieving self awareness (Fox, 1985a). However, there seems much of psychological and philosophical relevance to these arguments which does not necessitate a spiritual or mystical viewpoint (but which also does not exclude one). For example, eco-feminists might share similar concerns over the human connection to Nature, but on the basis of emphasising the importance of relationships and emotions (McShane, 2007b; McShane, 2007a).
- ⁱⁱⁱ In this respect 'deep green' proposals by Sylvan and Bennett (1994) were claimed by the authors to diverge from deep ecology. Although, some regard Sylvan as having started with an unsympathetic characterisation of deep ecology in the first place (Fox, 1985b).
- ^{iv} Herman Daly left the World Bank after six years with his opinion of it much downgraded but that institution unchanged. His farewell speech, besides pointing to flaws in external policy, criticised management and noted a climate of censorship and excessive control over staff (Daly, 1999).
- ^v Godfrey-Smith (2002) notes that Dewey went through three main stages in terms of his philosophy of science: Christian/Hegelian idealist, a 'classical' form of pragmatism and, from 1925 onwards, naturalism. The reference by Field (2005) to Dewey's concept of truth is then taken from the middle period and specifically essays from 1906-1909.
- ^{vi} According to Hookway (2010), other common features of American Pragmatism are anti-foundationalism, fallibilism, and the rejection of sharp dichotomies (e.g., fact vs. value).
- ^{vii} As the divisions alluded to above indicate, this was not, and is not, a unified school. Indeed, Peirce signified his disapproval of the use being made of his philosophy under the term Pragmatism. He eventually felt so divorced from other American Pragmatists that he started using the deliberately awkward term "Pragmaticism", on the basis that nobody else would be tempted to kidnap such an ugly term. Today those appealing to earlier authors differ in their interpretations, synthesis of ideas and conclusions. So, if somebody claims to be an American Pragmatist, the tradition followed and exact meaning can be far from clear.
- ^{viii} Others have also advocated positions on environmental policy and values informed by American Pragmatist writings, but which diverge from both Norton's and Bromley's interpretations (e.g., Light and Katz, 1996; McDonald, 2003).
- ^{ix} Without going further into American Pragmatism, this very brief introduction indicates a distinction can be made between the philosophical school of thought and the common

political pragmatism of more ordinary folk. Some suggest distinguishing the two by using a capital P when referring to the formal philosophical approach and a small p for the common meaning (Callicott et al., 2011; Norton, 2011).

^x Some might argue that civil protest and organised social resistance are the best approaches, to achieving environmental policy change, and just as pragmatic but with a different political ideology and goal as the motivator.

^{xi} The report appeared in 2006 and was critiqued very quickly (Spash, 2007b). Yet environmentalists took another year to wake-up. See the article by George Monbiot written for the Guardian newspaper in the UK. <http://www.monbiot.com/2008/02/19/an-exchange-of-souls/>. Ecological economists on the whole have taken even longer with many failing or refusing to recognise the problems entailed in adopting such mainstream approaches and discourse (Anderson and M'Gonigle, 2012).

^{xii} I exclude (neo-)Austrian economics specifically because of the ideological presumption that it makes concerning the central role of markets as opposed to other social and communitarian institutions. This is not to deny the existence of insightful ideas in some writings of some Austrian economists, but rather that collaboration with social ecological economists is not on the agenda.

^{xiii} As Dryzek (2005) has noted, there is some variety within ecological modernisation itself, so not all would be expected to fit here, or in any such category abstracted from their own preoccupations.