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**A centerpiece for ecological economics**

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## **A Centerpiece for Ecological Economics**

### **Abstract**

This new social theory offers a centering for ecological economics, with a philosophic background and a metaeconomic alternate to microeconomics as used in neoclassical economics. With a backdrop in cognitive neuroscience, evolutionary biology and psychology; metaphor; a typological map; empirical application and testing, the story is compelling. Self-interest presumed in standard economics is portrayed in metaphor as an egocentric stallion out of balance due to the nature of the horse and ways of the driver. The solution proposed is the need to realize a symbiotic balance with the complementary opposite, the empathic mare. A map utilizing the general principle of symmetry depicts a typical architectonic. Bridging with cognitive neuroscience and evolutionary theories, including evolutionary altruism, the theory reveals humanity having a triune brain reflected in ego (self-interest); empathic (others-interest); and symbiotic balancing (emergent-interest), rationally and reasonably considered. To demonstrate, metaeconomic analysis is applied to a case of soil and water conservation policy as it relates to farmer behavior, in order to further focus on Ego-Empathy as the centerpiece for ecological economics.

### **1. Introduction**

We share a common goal of establishing ecological economics. As Söllner (1997, p. 196) notes in calling for a new ecological economics, “it is doubtful whether things will change for the better unless a new social value theory is postulated which is indispensable as the centerpiece...” of that economics. We see it much the same way.

Such a theory is postulated, which integrates a social philosophy with a metaeconomic science. In this paper the narrative is around a story; coherent ideas; cognitive neuroscience and evolutionary biology/psychology/altruism; and empirical demonstration to posit: That egoistic and empathetic forces jointly give value and lead through symbiotic balancing to distinctly different economic actions. The empirical support of metaeconomics demonstrates value arising from both ego and empathy, not just from ego as postulated (generally without empirical test) by tough-minded neoclassicals or by empathy in other, tender-hearted environmental and ecological circles.

Ego, in the broad sense of Descartes' famous formula "*Cogito, ergo sum*" (I think, therefore I am) is widely considered as the cornerstone for modern philosophy, as self-interest is to partisan politics, and ego is to psychology; *homo economicus* to neoclassical economics and subtly selfish is to biology. Paradis and Williams state (1989, cited in Ridley, 1996, p.18): "As a general rule, a modern biologist seeing an animal doing something to benefit another assumes either that it is being manipulated by the other individual or that it is being subtly selfish." Psychology is likewise. As Batson, Fultz and Schoenrade (1987, cited in Eisenberg and Strayer, 1987, p. 163) relate "in general, modern psychological theories of motivation have assumed that the motivation underlying all behavior, including all prosocial behavior, is egotistic (i.e., directed toward the ultimate goal of increasing one's own welfare)." And, like a rose, ego by any other name is still ego (ie. *cogito, homo economicus, das Ich*, I, self-interest, self-love...), the dynamo at the middle of modernism as the driving force of society.

In a nutshell, we propose a centerpiece and a theoretical framework for ecological economics going beyond beliefs of modernism with merely egocentricity presumed,<sup>1</sup> a working hypothesis that directs much of science. To us, and to most others when pressed, it is self-evident that empathy is a force to recognize. At the same time, we do not advocate the deconstructionism proposed by postmodernism, nor agree that ego be regarded, as in traditional Eastern thought, “an illusion engendered by false seeing” (Reese, 1980, p. 142). Ego is valuable and necessary. Much of modern progress, particularly in fabricated environments can be attributed to Ego at work in society. We merely expose excesses and accent a void—to be filled with Empathy.

We assert that humans pursue a symbiotic balance: between self-centeredness and graciousness; selfish and altruistic; greed and sympathy; competition and cooperation. Parallel egoistic and empathic pursuits go on, simultaneously, with their symbiosis being what leads to non-zero sum, win-win outcomes that cannot be achieved otherwise. Rather than pursuing a manipulative and subtly selfish lifestyle, people often do and need to pursue a jointly egoistic (self) and empathic (others) package of interests on a distinctly and emergent higher, win-win plane. The evidence shows that this more closely represents meaning in mind, the biological reality that is the human brain, and thus what motivates both the individual pursuits and the nature of social organizations.

### *1.1 A likely story<sup>2</sup>*

Once upon a time, there was a chariot pulled by a white warhorse, Ego. He was a great stallion with sublime bilateral symmetry, master of successive states moving from A to B. As a champion of every

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<sup>1</sup>As Sober and Wilson (1998, p. 8) note: “The idea that human behavior is governed entirely by self-interest and that altruistic ultimate motives don't exist has never been supported by either a coherent theory or a crisp and decisive set of observations.”

<sup>2</sup> An original version of this story, by William Hayes, 'Building a Better Cart - Heh Where's the Horse' appeared on the EcolEcon Listserv on January 13, 2001.

competition, he had the power to speed up exponentially. His fiery eyes and fearful symmetry contrast sharply with his pure white coat.

The problem saw the stallion harnessed to a chariot reined by the fat, drunk sovereign. The ridiculous situation has the chariot careening out of control, with the driver laughing and enjoying the riotous ride, oblivious to any problem. Everyone else is alarmed with the chariot being off as not off track, trampling gardens, harming many, even on occasions killing some in the crowd. Increasingly the *oikos* is threatened.

Solon steps out of the crowd and heroically halts Ego. Solon's gentle voice calms Ego, then helps the slob off the chariot and puts the sovereign under doctors care: until he is sober, overcomes his addictions, loses weight – no longer a slave to his passions – he can not drive the chariot. There is consensus of all councils of the land that Solon takes charge in the interim.

Solon designs and constructs a cart, then finds another horse to help Ego pull it. The first horse is wild and uncontrollable, too emotional to be in harness. Solon realizes the need for a complementary and equal opposite, and finds a beautiful black mare.

Love at first sight! Empathy's watery eyes, complementary curves, and angelic demeanor complements Ego's symmetry, as her blackness in the dark complements his whiteness in the light.

Solon trains them together in earthly and heavenly pursuits. Now with room for all on the cart and a balanced team of horses, Solon educates the sovereign Symbio, who has since sobbered up, slimmed down and can reasonably take over the reins.

Symbio now enjoys experiencing Ego in tandem with Empathy and appreciating the value of first satisfying Need, in creating and constructing *oikos* with the cart. Solon also taught Simbio heavenly ways, of together, chariot and horses, flying the path to the higher plane, culturing Preference with spherical symmetry and infinite possibilities.

### *1.2. Depicting the problem*

The alarm has sounded and everyone but the sovereign is aware. Attendants have historically catered to the sovereign's, really, the sovereign consumer's, insatiable preference driven demands and sirens singing "greed is great" resulting in subjective slavery to emotions resulting in addictive consumption. Back in our world, specialists of all stripes appear at odds in reacting to crisis' with some appearing willing to accept the damage, and carry on as before.

Others make decisions from theory, clustered around ego, causing empirical contradictions. It is as if the myriad of theories with no coordinated plan are caught in *cul de sac*: at a dead end going around in circles, avoiding the damage excessive egocentric behavior does to the world. The behavior and thinking of theorists seems paradoxical though philosophers Thagard and Millgram (1997) explain:

The intransigence of economists and other devotees of traditional decision theory would be puzzling but for the insight from history and philosophy of science that a theory is rarely abandoned just because it faces empirical difficulties; rejection of the problematic theory comes only when a new theory comes along that is visibly superior in that it can explain most of what the previous theory did and more. No theory of decision making with the precision and broad application of the [neo] classical theory has yet emerged.

In creating a theory for better decision a symmetric space is established for common reference illustrated in Fig. 1. It implies a reality of actual asymmetric relationships: of Preference over Need, Ego over Empathy with Society bloated relative to Culture, Nature and Community – and an aim of striving towards equilibrium. Fig. 1 is a typology of four social elements: Society, Community, Culture, and Nature with two agents or active forces, Ego and Empathy; and two vehicles or passive mediums, Need and Preference. All eight terms are defined in pairs identified as complementary opposites: Society-Community; Nature-Culture; Needs-Preferences; Ego-Empathy.

The overview and methodology was intended to help develop communication and common understanding among disciplines. The elemental typology has roots in practical land management, integrated resource management and policy development recommendations for different levels of government. (Kerby, 1984; Hayes, 1992). As grounding, Nature is defined by Odum's ecologic science (Odum, 1989) classifying the

complete biosphere into fabricated, cultivated and natural environments. Culture, as a foundational form, is a complementary opposite of Nature seeing “ways of life” in aspects of urban, agrarian and aboriginal anthropologies. Society “ideally” overcomes conflict ethically with political and economic hierarchies, relative to individual, associative and universal states. It’s complementary opposite, the moral Community, is cooperative and egalitarian, kith and kin to personal affinity and relative place.

Abstracted as complementary opposites, we see the four spheres as a more coherent and complete set of assumptions reflecting human behavior and social relationships than those that merely cluster around ego and preference in standard economics. Besides the typology of social elements, the other terms (Ego, Empathy, Needs, Preferences) hypothetically form a set of assumptions considered inherent in patterns of human behavior, implying the exertion of active and passive powers causing action relative to Ego and Empathy as forces or agents with Need and Preference as vehicles or mediums. The spheres also suggest possibilities for diverse research and broad application, as a prototype aiding communication between disciplines and a core architectonic for classifying knowledge "a general delineation or outline" of a system of human reason (Kant, 1790, p. 520).

The purpose of the spheres is to establish a background with coherence, make comparisons and provide explanations. The method follows Weber's social science, which clarifies the relevance of typology with his concept of "ideal types" to denote hypothetical entities from empirically observable or historically recognized components. “Ideal” is a heuristic construct emphasizing “certain characteristics of a group of

occurrences, and by linking up with others...are so combined by us as to form a coherent or unitary whole” (Bullock, Stallybrass, Trombley, 1977, p. 403).

The social elements have analogous correspondence with established scientific typologies that give insights to asymmetries and put some light on the problem. In psychology, bipolar typology of four types is well established, particularly with Jung (1921, as translated and published in English, 1923). As a “structure of consciousness” the four mind functions: thinking-feeling, sensing-intuition were defined as opposites, which Jung claimed, "exhausts all possibilities” (Jacobi, 1942, p.16). In defining the terms as polar opposites in a fourfold structure, an isomorphic (one-to-one correspondence) analog pattern emerges between the mind functions and social elements where thinking is to Society as feeling is to Community, as sensing is to Nature and intuition is to Culture.

The correspondence leads to speculation that individuals could pursue equilibrium across the social spheres with the mind functions in order to arrive at a keener perception and sounder judgment (the perceiving-judging scale in the Myers-Briggs application of Jung). Perhaps with such perception and judgment, a better albeit still irreversible path in Darwin’s evolutionary world (and Norgaard’s, 1995, coevolutionary world with economy) will be chosen. It is obvious that Newton’s mechanical world seen only in egocentric, preference driven society with its presumed patterns of reversibility and readily reconstructed new machinery, when ego has made substantive mistakes down the wrong paths, is not workable anymore.

Daly and Cobb (1989) see something similar with Whitehead’s fallacy of “misplaced concreteness” identifying an asymmetric pattern using Aristotle’s typology of

causes, which sticks like mud to neoclassical economics. Wisely they not only criticize; they positively put forward two rules of thumb to help avoid this fallacy in economics: (1) by avoiding excessive specialization and (2) by “getting back to the concrete is to look at all four of Aristotle’s notions of cause” (Daly and Cobb, 1989, p. 42).

There is also an isomorphic relationship between Aristotle’s four causes and the social elements revealed in the sentence: “We plan to construct a house to create a home.”

“We plan”	formal cause	corresponds to	Culture
“to construct”	efficient cause	“	Society
"a house"	material cause	“	Nature
"to create a home."	final cause	“	Community

When Daly and Cobb (1989, p. 42) assert: “In economics our attention is overwhelmingly focused on efficient and formal causes” it reveals the same asymmetric pattern we see in Society and somewhat in Culture.

The same procedure can be used with other fourfold typologies: i.e., Comte’s “progress” and Weber’s “social action”. What is excessive and what is diminished emerges in the same place, in isomorphic relationships. If we overlay Jung’s mind functions, it suggests we’re also thinking too much! An explosion of knowledge flying in the face of diminished sensibility, mixed feelings and no viable plan. Also, these examples from psychology, sociology, and philosophy not only see the same problem from different perspectives, but they each and all imply a resolution of the problem as equilibrium.

While critical of neoclassical economics in the appearance of an asymmetric excess of Ego, Preference and Society relative to the other features in Fig. 1, ironically neoclassical economics positively makes Preference the outstanding feature, the most developed term of any in the spheres. Preference implies choice prominently displayed by free market forces, the cornerstone of neoclassical economics largely shaped with marginal analysis. Because they've abstracted *Homo economicus* from reality and since the neoclassicals only deal with scarce commodities of the market place, and when they "walk with Walras" to "subordinate the facts to the concerns of theory" (Daly and Cobb, 1989, p. 31) provides scientific content to the Preference feature. Nevertheless, Society-Preference-Culture, highlighted by the phenomenal growth of human fabrications, is grossly asymmetric relative to Nature-Need-Community.

Daly and Cobb also outline the problem of the "insatiability postulate" of Preference (which we dramatized earlier as "greed is great")." As they conclude (Daly and Cobb, 1989, p. 87): "The no satiety postulate seems poorly founded and in considerable tension, if not contradiction, with the much better founded law of diminishing marginal utility." Along with diminishing marginal utility, the satiety limit can be defined by Need satisfaction and seemingly achieve symmetry with Preference. Maslow's needs hierarchy (physiologic, safety, belongingness, and esteem) appears to fill the cart with what's necessary for Need. Before greed, satisfy Need – and liberate Cultural preferences.

## **2. Centering with ego and empathy**

What do we mean by Ego and Empathy? When a baby first intentionally reaches for an object the situation presupposes a separation between object and child. That

separation, grasping and manipulating simply defines ego, primitive objective thinking, self-interest and is considered crucial for individuality to develop and for reason to flourish. With Empathy, seeing a mother cradling her baby reveals the empathic feeling function, in mutual smiling, and the subjective unity of mother and child. Thus separation of self and object is seen as Ego arising with the lead role of sensing in Nature, and appearing as the foundation of thinking in Society; analogously, Empathy arising from the feeling function in Community is seen as the foundation of Culture. The latter is supported by the contention that empathetic awareness is the core experience of aesthetics exemplified in all the arts (Reese, 1980, p. 306).

Starting at around age-2, we give the name “terrible twos” as the child pulls away, in expression of an “I” centered personality, the egocentric self. Intriguingly, while most recognize the problems with the terrible-two behaviors, the neoclassical application of microeconomics applauds it throughout the lifetime. While we see the “terrible twos” dominating personality at that age, we also see the emergence of empathy illustrated in the following story:

Little Aaron, aged 24 months, would routinely come to his mother saying things like, "I bump my head. Kiss it." But one morning, for the first time ever, the tables turned. While his mother was dressing him, she realized she had a bruise on her hand. Without really thinking she said, "Ow, my hand hurts." Aaron immediately responded, "I kiss it." (Holyoak and Thagard, 1997).

As a child becomes a youth then an adult, some develop a highly refined version of self-interest, and we say such people are egocentric, perhaps selfish, putting most life energy into Ego. Others during this time refine the focus towards the empathic, putting most life-energy into Empathy, strikingly similar to Smith’s “fellow-feeling” (Smith, 1790), as revealed in the caring occupations, nurses, teachers, social workers, and perhaps

environmental organizations focused on other, natural life forms. Many, perhaps most, with some emotional loading, experience a tug-and-pull between the egoistic and the empathic, a constant tension as it were (following Cory, 1999).

Empathy knows by way of “feeling with” another, derived from the German *Einführung* that was translated into empathy in early 20th century American experimental psychology. *Gemeinschaftsgefühl*, the core concept of Adler’s individual psychology, has been translated as “social feeling,” centers on identification and empathy (Ansbacher and Ansbacher, 1956, p. 135). Likewise, empathy was cherished by social and developmental psychologists to explain altruistic behavior (Wispe, in Eisenberg and Strayer, 1987, p. 17). It is an inclusive concept encompassing sympathy, feeling, character, role taking, gaining perspective and significant for the notion of social capital. In evolution, empathy has importance for communal value and inclusive fitness “that is probably based on innate schemata that are genetically determined” (Eisenberg and Strayer, 1987, p. 45).

Empathy and sympathy are fused by feelings and awareness though “empathy is a way of knowing, sympathy is a way of relating” (Wispe, 1991, p. 80). Sympathy is a subjective sharing of a negative experience with someone else, such as sorrow and suffering that leads to an emotional response. Empathy is more the situation of Smith’s “impartial spectator” (Smith, 1790), a way of knowing or subjectively sharing a positive or negative feeling state of another, as a mother's equitable empathic knowledge of her child is a force enabling her to satisfy need in negative understanding or providing preferences in positive understanding.

Wispe (1991) calls Hume, Smith and Schopenhauer the “heroes of sympathy”, crucial to conceptions of morality and ethics. Hume opened the modern discussion of

sympathy with his psychological philosophy; Adam Smith looked at moral development in his other book (see Smith, 1790); while Schopenhauer saw sympathy as motivation and the foundation of morality. Darwin, in *Descent of Man* (1871) regarded it as the most important “difference between man and lower animals” (cited in Wispe, 1991, p. 39).

In *A Likely Story*, Ego and Empathy are ways of knowing that work together. They are emotionally bonded, in “love,” which naturally encourages cooperation and consideration of the other. Emotion, literally coming from Latin *e* (out) and *movere* (move) means to strongly stir up the body, agitation in positive or negative ways. Not to be confused with feeling as a mind function that reflects memories, behaviors and acts in conjunction with the other mind functions (thinking, sensing and intuition). The sovereign in *A Likely Story*, due to addictions, is enslaved by emotions – is unaware and in no condition to drive, emotionally overloaded – over the limit. Ego, as a result, is emotionally agitated and out-of-control in Society. Halting the emotional outrages of sovereign and horse is Solon, the hand of reason, who vetoes then intervenes with practical sensibility, reflective feeling and a sustainable plan.

Ego and Empathy are guided by judgment and perspective of conscious mind functions seeking equilibrium. Other writers have long dealt with the emotional problems considered inherent in ego. In Plato’s *Phaedrus* his horse metaphor deals with these emotional aspects of behavior. The tensions and conflict from this ancient story has some similarity to the “ego states” of Child, Parent and Adult in modern Transactional Analysis (after Berne, 1961). A similar scene appears with the ambivalence framework of Opaluch and Segerson (1998, esp. pp. 90-91). Here tension and conflict in the middle between values and tastes refer to egotistic tendencies – never empathy, as indicted by

their conclusion that, in the limit, there is only one indifference curve (see Fig. 4 in Opaluch and Segerson, 1989, p. 91). Akerlof and Dickens (1982) likewise suggest emotional fighting, not the teamwork of Ego and Empathy working positively and productively together – with an emergence more akin to Khalil’s “distinct entity” (1990, p. 266), not a conflicting summative mixture, but a distinct outcome of working in tandem.

A symbiotically balanced and reformed sovereign consumer, Symbio, is ethical and moral, whether in choices of conservation practices or selling used cars, rather than always leading to the market for “lemons” and other “asymmetric information” problems for which Akerlof (and others) was awarded the Nobel Prize in economics. Intriguingly, Akerlof (1970) in the classic “lemons” paper didn’t recognize the empathic role, the part of the seller that may indeed inform the prospective buyer of the lemon car about its problems. Asymmetric information (and the “invisible hand of the market”) is really, instead, as much a question of morality and subjective purpose with the empathic mare, as it is a question of ethics and objective purpose, with the egoistic stallion.

### **3. Building bridges**

The journey toward metaeconomics started about the same time as evolutionary psychology, in the late 1970s (see Buss, 1999, p. xix). Panksepp and Panksepp (2000) point out this relative youth of evolutionary psychology, and how it has yet to be bridged with ethology, behavioral genetics and comparative neuroscience. Cory (1999; 2000) sees neuroscience as the connecting discipline, bridging across evolutionary biology and behavioral ecology through evolutionary, cognitive psychology and other social sciences, and, ultimately, connecting to the humanities. Cory (1999) elaborates the neuroscience

research by MacLean (1990), deciphering it for us as social scientists, suggesting the evolutionary path for each human involves the continued development of a triune brain (see Fig. 2). Like Cory (2000), we move in the spirit of E. O. Wilson's hope for *Consilience* seeing "...one part folding into or becoming continuous with biology, and the other fusing with the humanities" (Wilson, 1998, p. 12).

At the core of the brain is the earliest protoreptilian complex (Fig. 2) from which emerges the egoistic part of our tendencies, the prototype of individuality that eventually founds the self-interest in the sphere of Society. Need satisfaction seen in fundamental drives for survival emerge here - the competitive arena for Ego in Nature. Manipulation and subtle selfishness, as Paradis and Williams (1989) reveal, is deemed supreme and overriding by modern biologists and neoclassical economists. In the sense that it is at the core of survival and satisfying Need, we can see the partial and appealing truth content of that contention. As such, models built on this belief have taken us a long ways.

Yet, neuroscience (and our own human experience of common sense) demonstrates that far more than sublime ego is positively at work. This science shows that self-interest is not generally separable from an empathic others-interest except perhaps in severely disturbed individuals, including the criminal mind leading to extreme violence such as torture and murder - demonstrating no empathy - in a monstrous approach toward others. Excessive ego and avoiding the empathic implications has the appearance of societal states reinforcing disorders such as psychopathy, when key symptoms of psychopaths are "egocentricity" and "lack of empathy" (Hare, 1993, p. 34). Societal institutions advocating control and power primarily through Ego and Preference

in partisan politics and accommodating economics thereby appear out of control relative to the looming problems of the new millenium.

Awareness of others-interest appears to arise in an autonomous and yet quite interdependent part of the brain represented in the first overlay, the paleomammalian complex (Fig 2). This is where the beautiful mare, Empathy was born motivating identification with others, with nurture and nature, leading moral community and helping ethical society. Healthy people tend towards the true and good – want to do the right thing.

These two semi-autonomous but yet interdependent parts demonstrate, like our two horses, a balancing occurring in the neocortex neomammalian complex (Fig. 2), largely situated in the frontal cortex of the brain (Cory, 1999, see esp. pp. 34-36), where the empathic and egoistic forces converge, and complement each other. We highlight how Empathy influences egocentric motives, as Ego influences empathetic motives.

It is also in the neocortex area where diligence is at work giving focus and is what leads to this centering. Solon needs to take the reins and bring professional care to the sovereign, recognizing the role of Society in achieving this distinct state. To be mentally healthy and highly conscious, with good balance in self and other's interest, humanity has to be virtuous and thus in the path of the all inclusive cart operating more deliberately to satisfy Need, and achieve Preference with the sleek and specialized chariot.

We also find in this balancing the phenomenon of reciprocity, with the real potential arising for a non-zero sum outcome in a distinct state of existence both within self and with others, including the entirety of the biosphere. We perhaps are hard-wired to find non-zero sums (also see Wright, 2000) arising from the reciprocity between ego

and empathy states, both within self and with others. As Cory (1999, p. 47) notes, the universally observed norm of reciprocity has been shown to be possible in evolutionary theory, within Hamilton's (1964) inclusive fitness theory; Trivers' (1971) reciprocal altruism; as well as in game theory, e.g., Axelrod (1984). Cory (1999, p. 47) notes how these efforts have rested on the presumption that reciprocity is driven by the self-interest (e.g., ensuring one's genes make it to the next generation), but that evidence of it also being driven by altruism is coming to light, e.g., in studies of rhesus monkeys. Armed with the notion that reciprocity, driven largely by altruism, can be at work, we can also see how it may fail to occur, and see more clearly why some environmentalists and ecologists call for government control due to the lack of ability and diligence by individuals in the balancing part. This lack can result in market (self-interested) failure, due to an altruistic reciprocity in the positive sense not being in place.

Solon needs to remain watchful. At times, governors are needed in order to reach the empathetically conditioned state, to keep ourselves from over pumping of an aquifer; farming to cause too much soil erosion; burning coal and releasing large amounts of carbon; and harvesting too many fish. It is when we fail to symbiotically balance the egoistic and the empathic tendencies that the zero sum, and, in the case of deteriorating ecosystems even a negative-sum game, becomes operant. The chariot crashes into the crowd, and violates the wall of ecological limits.

Notably, negatives can occur on both sides. We can be emotionally addicted like the sovereign or agitated, like Ego – and Empathy could easily be emotionally upset (though she isn't in *A Likely Story*). There can also be negatives in confused purposes such as when feelings intrude on the thinking to construct a house; or thinking intrudes

on feelings to create a home. Negatives occur when Ego intrudes, when the analog Society tries to lead, in subjective purposes in the sphere of Community. This appears as market failure that doesn't satisfy Need. It is also negative when Empathy tries to lead in objective purposes, where intrusion into the sphere of Society where personal feelings cause government failure.

The third way recognizes that, positively, ego leads toward objective aims, and empathy leads with subjective aims, simultaneously, like a husband and wife sitting around a hearth planning their house and home: centered joint efforts reaching a higher plane, a distinct state. Here we move forward together recognizing and achieving ecological limits on a jointly evolved and involved path. We first achieve the centering needed to provide the focus; we then have the potential to equate the four spheres in a common circumference while moving onto a sustainable path.

We see that eventually key insights of MacLean and Cory hold the potential to be merged with that in evolutionary psychology, being on the same path to connect biology and psychology. Buss (1999, pp. 4 - 18) notes how the history of evolutionary psychology really starts with the history of evolutionary biology, going back to Darwin with natural selection; coming through Mendel with the discovery of genes as the inherited unit. The ethology movement asked how structure led to behavior, asking psychologists to consider how biology affected behavior. Hamilton's (1964) inclusive fitness theory (also see Barash, 2001, on Hamilton's role in the gene-centered theory of behavior), led to new explanations wherein the gene played a role in not only survival but also altruism, especially altruism toward kin; adaptation and natural selection; Triver's (1971) theories on altruism and cooperation, again representing gene-level thinking, but

going well beyond the gene centered self-interest thesis of Hamilton (and the Dawkins, 1976, selfish gene), something more akin to Sober and Wilson's (1998) psychological altruism; and, finally, the sociobiology of E. O. Wilson, seeing that humans are really just a part of the natural system, and that much in our social relationships is reflected by biology. As alluded to earlier, we like Cory (1999) see the potential for altruistic reciprocity in the play of ego and empathy.

#### **4. Empirical testing**

A specific example of farmer behavior focused on conserving and providing for agrobiodiversity will help explain the problem and gain understanding of what we see as the solution. Neoclassical economics persists in telling tales that farmers have a strictly egoistic, self-interested motivation. The reality is that farmers are dually motivated,<sup>3</sup> work their fields with Ego and Empathy, as captured here in a statement by a Nebraska farmer (Kleinschmit, 1998, cited in Cutforth, 1999, p. 72):

Adopting a change in a farming practice involves risk - financial and personal. The financial risk, though real and important, can be overcome with cost-share programs and grants. The greatest hurdle to adoption is peer review. To most family farms, especially those handed down for generations, a farm is much more than property. It is a farmer's identity, her or his reputation and status in the community.

This reality is revealed in the statistical results in that study. Intriguingly, U.S. government conservation programs historically have focused on either the financial risk, and thus the egocentric part, or, on the empathic part through appeals to feelings and emotions, and, when the latter failed, using coercive regulations and mandates. The misunderstanding is that this farmer, instead, having both a self-interest and an others-

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<sup>3</sup>Commercial fishers have also been found to be motivated by the joint pursuit of benefits greater than costs (profits) and moral obligation, as well as being affected by social influences (see Kuperan and Sutinen, 1998; Sutinen and Kuperan, 1999). Perhaps this extends beyond farmers and fishers as well.

interest, seeks a distinct state, not in either alone, but in both realms, jointly. The failure to see this helps explain the failure of both market and government as reflected in soil and water conservation programs, and documented each time a new study is done (see the continuing saga in U.S. General Accounting Office, 1977; U.S. Department of Agriculture, 1989; and National Academy of Sciences, 1993, all highlighted in Nowak and Korsching, 1998). Standard arch approaches by the economists and sociologists have not helped much. Lockeretz (1990) makes the convincing case that even after decades of research into the matter we know very little about why farmers conserve or do not conserve. We contend this is due to resting on metaphors of single horses pulling the chariot, as the traditional economists and sociologists doing this work usually do, rather than about a team at work, such as in the mind of Mr. Kleinschmit, in tune with Nature, Community and his way of life. Yet, he is also sees the pressures of Society, as manifested in the market of corn and soybeans that drives the move away from biodiversity as markets fail to reflect preferences for it.

The problem is depicted in abstract form in Fig. 3, after Lynne (1999; 2002b), with the two horses illustrated by the overlapping iso-interests curves (drawing heavily on the economics of limitative and complementary processes, after Frisch, 1965, in contrast to processes that have infinite substitution possibilities), one set for each horse. With the egoistic conservationist maximizing profit for least cost combinations of more conventional inputs along path 0G or the empathic conservationist maximizing the outcomes from doing-the-right-thing along path 0M, but more generally being coerced, forced to be on 0M by a requirement generally imposed by some agency of government. We posit an eventual convergence, and a coevolution (not unlike Norgaard, 1995) over

time to a balanced path OZ, if the road laid through policy for the horses is one that helps realize the symbiotic balancing. Like Moldoveanu and Stevenson (2001, p. 324), we see the individual ... both a farmer and the regulator acting on policy ... as “self-inquirer... who builds knowledge through reflective action,” such that these two sets of interest curves evolve together, one influencing the other, as action is taken and experienced on the farm, as well as in policy and regulator realms.

Predictably, we see policy protests from the free market environmentalism (and, neoclassical) side wanting the freedom of choice on path OG, and protests from the controlling environmentalism side wanting to force farmers onto some path OM. One cannot be on both paths, that is, at best we can drag the other horse along on such paths, so we experience conflict, high transactions costs, and both market and government failure. Instead, we need a third-way, action oriented, approach: The team of horses inexorably move down the path OZ, with Preferences evolving and balanced with evolving Need, as Ego evolves with Empathy. Notice, too, how at any point along OG the implicit value of the environmental amenities is zero while at any point along OM that value is presumed infinite, as illustrated at A and C in Fig. 4, which also suggests the two kinds of interests are incommensurable. These horses are separate entities, yet interdependent. (The ego-empathy frontier in Fig. 4 is plotted from levels of interests along a capital budget line such as RR' in Fig. 3; see Lynne, 2002b, for the mathematical derivation of Fig. 4 relationships).

Mr. Kleinschmidt, instead, seeks a higher plane, driving both horses down the same path OZ, pursuing the distinct Point B. To build this path, we need the third-way policy, a road that naturally arises from this metaeconomic's formulation. We need to see

the reality that perhaps many farmers like Mr. Kleinschmidt when given the opportunity will not maximize but rather “satisfice” (similar to the notion in Simon, 1997). As Adam Smith (1790) has it in focusing on the sympathies, a book he wrote to complement and better explain the egocentric rendition of what leads to the wealth of nations in Smith (1784), the self-interested individual would go to the station of the impartial spectator before choosing the technology package, and do the right thing. This is what true wealth of a nation is actually about: Adam Smith understood something of symbiotic balancing, where win-win arises. So, we need to shift conservation to helping Mr. Kleinschmidt and others reach the distinct plane. In order to develop this policy, we seek to know the slope ( $dI_G/dI_M$ ) of the target population, as an empirical indicator of how the balance is now being struck, which then suggests policy direction.

We have been finding that farmers are both self-interested and others-interested in soil and water conservation decisions, in research going back to the mid-1980s (see Lynne et al., 1988; Lynne and Rola, 1988). In more recent studies (Lynne et al., 1995; Lynne and Casey, 1998; Cutforth et al., 2001; Lynne et al., 2002c), we have focused on estimating the actual degree to which farm populations emphasize the self-interest, the others-interest and resolve the symbiotic balance in the interests. The task is to estimate  $dI_G/dI_M$ , the slope of the ego-empathy frontier in Fig. 4, through calculating the ratio of the partial derivatives with respect to  $I_m$  and  $I_G$  (see Lynne, 2002b, for details). Doing so is straightforward for the ordinary least squares model in Lynne et al., 2002c). For the other two cases (Lynne et al., 1995; Lynne and Casey, 1998), tobits were used, after Tobin (1958), so calculating  $dI_G/dI_M$  focuses concern on the decomposition of the effect of change in some variable with the focus on the expected value ( $Ey^*$ ) above the limit,

where  $y$  is the dependent variable, i.e., we focus only on the adopters of the technologies for these cases. McDonald and Moffitt (1980, p. 319) demonstrate, the change in the expected value conditioned on being above the limit is given by  $\partial E y^* / \partial X_i = \beta_i [1 - z f(z) / F(z) - f(z)^2 / F(z)^2]$ , where  $X_i$  is the variable of concern,  $f(z)$  is the unit normal density and  $F(z)$  is the cumulative probability function. Notice that ratioing any two adjusted  $\beta$ s cancels the term in brackets, so the unadjusted  $\beta$ s from a tobit can be used to calculate the  $(dI_G/dI_M)$ . We estimate this slope of the ego-empathy function in Fig. 4, and also indicate the kind of technical interdependence  $D_{GM}$  (Table 1; please see the original studies for how the parameters used in the calculations in Table 1 were estimated).

The approach demonstrates the power to quantify and test for what is presumed in neoclassical economics. We now have in Table 1 an empirical measure suggesting the operant balancing. We see the strawberry farmers with  $(dI_G/dI_M) = -40.43$  as being quite empathetic, and thus willing to adopt environmental technologies while sacrificing profits, although  $-40.43$  still indicates a moderate level of empathy in that it is a substantive distance from  $-4$ . We find the tomato farmers with  $(dI_G/dI_M) = -0.22$ , being quite egocentric, and perhaps unwilling to move to the environmental, resource conserving technologies. We find the corn-soybean farmers with  $(dI_G/dI_M) = -0.82$ , and not too far from  $-1.00$ , which would suggest a point orthogonal to a 45-degree line out of the origin of Fig. 4, and a point of reasonable balance.

In qualitative support of these empirical measures, the tomato growers are the most industrialized and corporate of the three groups, and perhaps, then, most egocentric. In contrast, the strawberry growers in this case live and work near a small town, with the name even associated with the strawberry plant, Plant City, Florida, and are a closer-knit

populace wherein the same families have farmed strawberries for several generations. Events like the annual “strawberry festival” contribute to Community. They are driving the team with everyone invited into the cart, more so than in the tomato industry that evolved around having to find new land every few years, in the days before fungicides and pesticides, to better manage the disease and insect problems. Climate was also a factor. In the early history of the Florida tomato industry, some farmed tomatoes in New Jersey in the summer, and in the Homestead/Miami area of South Florida in the winter, hauling machinery back and forth on the coastal train system, gypsy farmers not generally putting into place.

The corn-soybean farmers of the western U.S. corn belt area are more closely knit than the farmers in the tomato production areas in Florida, but less so than the small group of strawberry farmers around that one small town near the Gulf Coast of Florida. As with strawberries, some in this group are still farming in the same area after several generations, like Mr. Kleinschmit. We see good balance in the team of horses pulling this cart, a focus on the center, and a move to elaborating the common circumference of the spheres. Generally, the results suggest that the farmers in these three studies act with a high degree of independence while still seeing the need for networking based upon shared norms leading to community trust, with the symbiotic balancing yielding various degrees of empathy. They see the positives of driving a disciplined team, some more so, some less so.

This metaeconomic analysis points to different policy development. Policy-wise, we would need to approach the tomato growers with incentives, perhaps mandates or controls, in that empathy is not a substantive force in the farming decision. They operate

asymmetrically in the realm of Society. The strawberry growers, operating with more empathy (and, while having Preferences, also seeing Need) can be approached with appeals to their values, to do the right thing for Nature, Culture and Community, although economic incentives are not without affect. The corn and soybean growers are perhaps already near a state of symbiotic balance within their own communities with respect to what is acceptable, feeding both Ego and Empathy; recognizing preferences and needs; at near equilibrium in the four spheres of existence. The way they farm will likely remain quite stable unless some outside force to change both prices and values is brought to bear to change the mix. This is a danger, where outside norms reflected in prices representing largely egoistic drives can severely tear the horses apart in a local community.

## **5. Conclusions**

Our project is ambitious. We propose to put heart into standard neoclassical economics, complementing that which has gone before. Excessive egocentric behavior void of empathy with power and consumption habits out of control, threatens our existence. Greed is grotesque. From our overview, the societal sphere has culture held at bay in the “invisible hand” metaphor hiding in the background, while nature separated out, at worst, as a wasteland and at best as a value-less resource; a residual claimant on the national product. Community comes into view impoverished, in need, and void of empathic space.

What is hypothesized is a shift at the center of relationships to make a place for Empathy along side Ego, reminiscent of Maslow’s (1954) idea that the self-actualized individual manages to “fuse the dichotomies.” Likewise, Buber (1922) characterizes people as simultaneously having I-tendencies and He/She/It-tendencies. Buber envisions

the purpose in our evolution as that of seeking the distinct I-Thou state, in contrast to an I-He/She or I-It state. This insight and vision, at the individual and personal level, is extended to humanity as a whole.

In furtherance, we provide a metaphorical basis of a new theory of economic behavior that paradoxically does not stray far from the dominant neoclassical economic theory of the day in that we use similar analytical devices. It is so radical, though, as to focus on a completely different root problem but paradoxically not so revolutionary as to upset the established order. This is the case even though it will require that the centerpiece of what we now know as microeconomics be re-configured, due to the metaphor being substantively different. Neoclassical economics and the microeconomic tool of *homo economicus* as we know it becomes a special case of metaeconomics, in that if empirical testing results in failure to reject the null hypothesis of “no empathic, others-interest at work,” we are back to the microeconomics model. “Overly ambitious,” as one of our reviewers of an earlier draft of this paper suggested: Perhaps yes. Needed and justified? Also, yes.

As we move forward, metaeconomics starts to represent the metaphor in technical economic terms. This has been the historical approach of development in economic theory with some things left as metaphor perhaps due to the emotional loading they carry, e.g., the “invisible hand” has a nice ring to it – sense of security and good feelings – while making other things technical in nature (see Lagueux, 1999). By teaming Empathy to the standard economic model, by building on the base of an alternative metaphor, and drawing on biology, especially in neuroscience, and evolutionary psychology, supports a

significant shift and a new centering needed in economic theory and practice (For a start at the mathematical economics rendition, see Lynne, 2002b).

Overall, we believe that metaeconomics helps in better understanding, and converting concepts, moving metaphors and other images into technical economics. This has been the case with Sen's (1977) "claims of others;" Etzioni's (1986; 1988) need to build a new economics with a "moral dimension;" Elster's (1986) "multiple self" problem, emphasized in Moldoveanu and Stevenson's (2001) possibility of an "internally incoherent nature of selfhood;" Frank's (1988) "commitments;" George's (1993) "metapreferences;" Schelling's (1984) "ego-economics;" and Khalil's (1990, p. 266) "distinct entity". Our earlier papers have drawn the connections to metaeconomics (Lynne et al., 1995; Lynne and Casey, 1998; Lynne, 1999; Lynne, 2002a).

Regarding empirical support, we have been studying farm populations, and have found that farmers in various parts of the U.S.A. seek two incommensurable, self- and others-interests reflecting egoistic and empathic tendencies. Further, some of these farmers are operating in a kind of symbiotically balanced position, on a higher plane, being simultaneously one with others, including Nature, Culture, and Community, and Society, and acting on the moral dimension of their technology decisions. Evidence for such a state suggests the path a "social reconstruction (Söllner, 1997, p. 196)" economics might take, a path that recognizes real human beings and real experience..

We can also see from the empirical evidence where the neoclassicals will be on target sometimes; indeed, some farmers are quite egocentric. The rest of the story, however, needs to be told. The empathic role needs to be understood, in that people generally have this tendency, and its needed in order to attain sustainability. Indeed, as

Sober and Wilson (1998) argue, we need it for the very evolution and continuance of the human species. In fact, by telling the other half of the story encourages the focus on Need, too, while going beyond Preference, with all centered and seeking equilibrium as in Fig. 1. We ask about the nature of the behavior behind the driver in the economy and society; the nature of agents as active forces and mediums as passive vehicles – and the path on which we drive together. Ironically and paradoxically, the more the moral, the empathetic dimension is considered in finding the answers, the more objective the economic analysis becomes.

The old microeconomics is quite misleading, distorting empathic tendencies, promoting lopsided policy and programs, overdeveloping Society to the detriment of Nature, Community and Culture. At least, with a new metaphor and the first steps taken to convert the metaphor into a new technical economics, we can now clearly see the problem, the gross imbalance, even if finding solutions will still be challenging. It seems that an economics focused on the ecological question, and operating from a different core of understanding, could indeed form the basis for the new centerpiece for ecological economics so sorely needed.

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Table 1. Empirical measurements of the balancing effect ( $dI_G/dI_M$ ) and type of balancing ( $D_{GM}$ ) in farm use of soil and water conservation, agrobiodiversity technologies

Study	Context*	Means**		Balance	
		$E(I_G)$	$E(I_M)$	$(dI_G/dI_M)$	$D_{GM}$
	Farm water saving in strawberry				
Lynne et al. (1995)	production	14	314	-40.43	<0
	Farm water saving in tomato				
Lynne and Casey (1998)	production	29	30	-0.22	<0
	Farm crop diversity in corn-soybean				
Lynne et al. (2002c)	production	--	--	-0.82	0

\* “Farm” means “scale at the level of the farm” in contrast to a particular field on a farm. The action, time, context, target must be in alignment to estimate such proxies, which for these estimates were all defined at the farm level.

\*\*The mean of the perceived behavioral control variable was also needed in the calculations, estimated at 90 and 35, and not available in the published 1995 and 1998 studies.

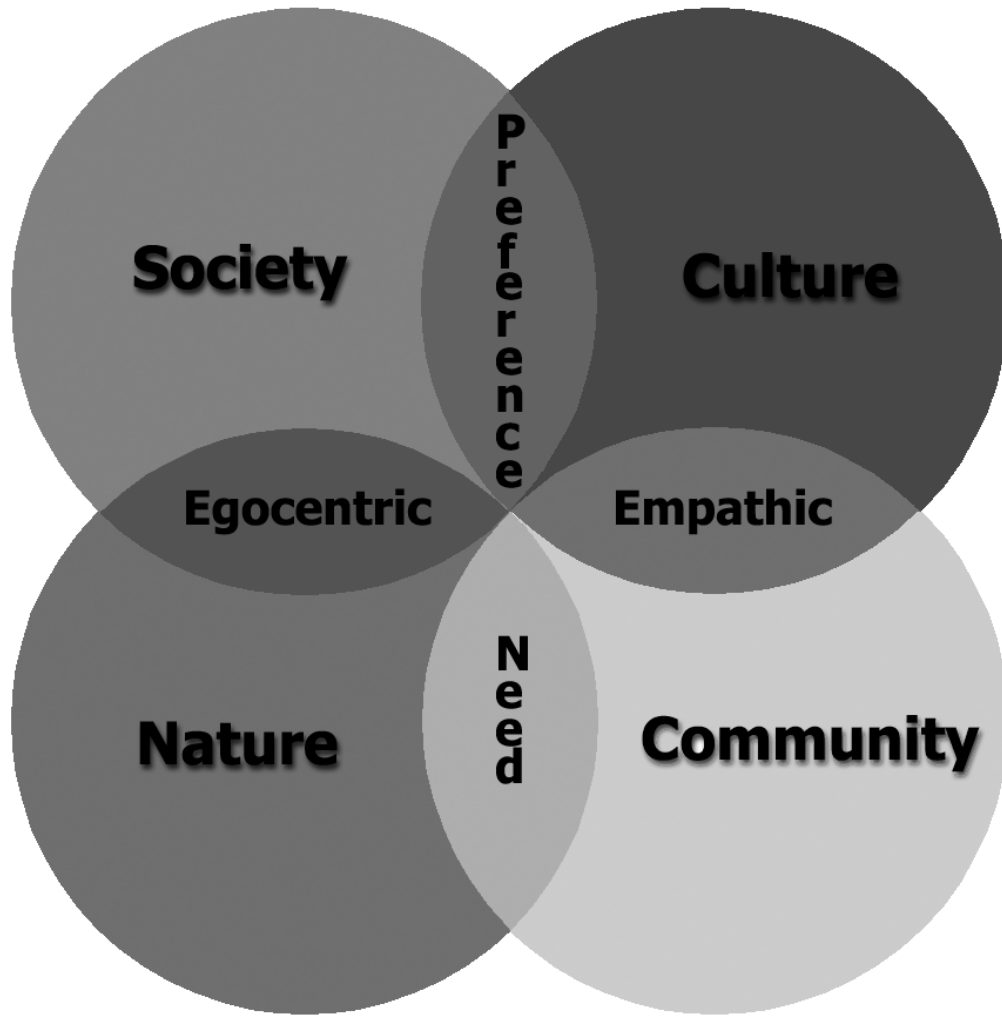


Fig. 1. Hayes' Spheres: Towards a pivotal point and circumference for centering ecological economics (see Beattie, L., Hayes, W., 2001).

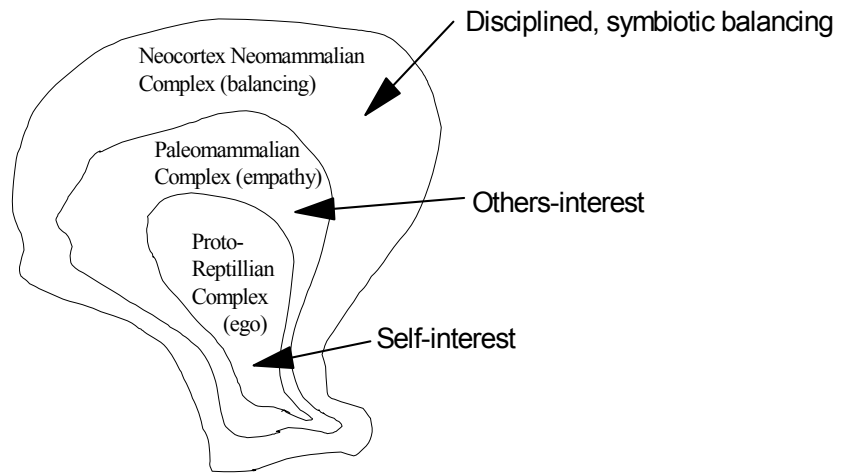


Fig. 2. Triune brain structure in humans (after Cory, 1999).



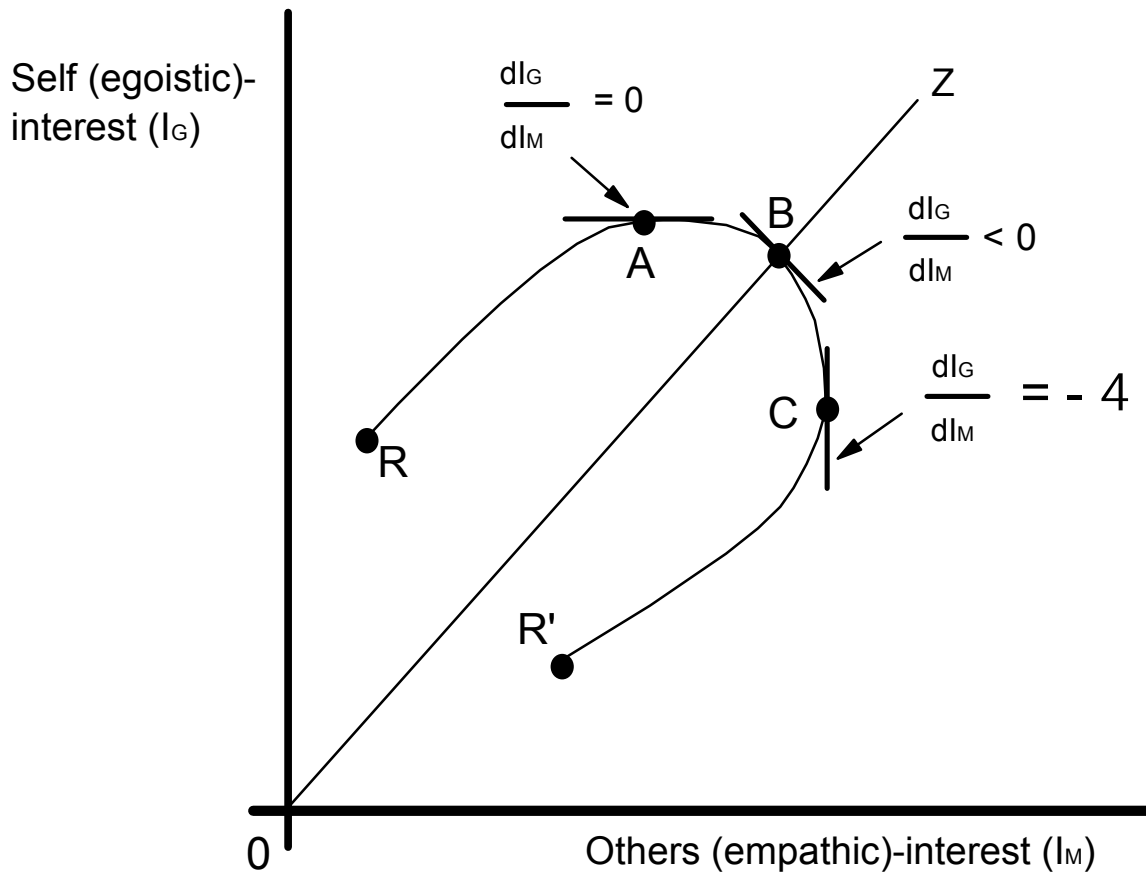


Fig. 4. Lynne's Metaeconomics: Ego-empathy frontier representing symbiotic balancing in the pursuit of the egoistic self-interest ( $I_G$ ) and the empathic others-interest ( $I_M$ ) (see Lynne, 2002b).

## Figure Captions

Fig. 1. Hayes' Spheres: Toward a pivotal point and circumference for centering an ecological economics (see Beattie, L., Hayes, W., 2001).

Fig. 2. Triune brain structure in humans (after Cory, 1999)

Fig. 3. Lynne's Metaeconomics: Jointly egoistic self-interest ( $I_G$ ) and empathic others-interest ( $I_M$ ) isoquants for farming with industrial inputs ( $X_2$ ) and conservation/ecological inputs ( $X_1$ ) (see Lynne, 2002b).

Fig. 4. Lynne's Metaeconomics: Ego-empathy frontier representing symbiotic balancing in the pursuit of the egoistic self-interest ( $I_G$ ) and the empathic others-interest ( $I_M$ ) (see Lynne, 2002b).

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