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Pilon, André Francisco

University of São Paulo

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Building a New World: An Ecosystemic Approach for Global Change & Development Design

André Francisco Pilon¹

1 University of São Paulo; International Academy of Science, Health & Ecology; email: gaiarine@usp.br

Abstract: Contemporary problems stem from the prevailing power-driven ethos, anomic individualism, which diverts human concern into technological invention, scientific advancement, and unlimited material consumption and production. Beyond the creation of choices, development of capacities and motivations, quality of life depend on incentive structures of cultural, social, political and economical institutions, more critical than individual motives and morals. To develop insight on the need to put forth normative forecasts to reach more sustainable future states that can solve some of the problematic trends, new paradigms of growth, power, wealth, work and freedom should be linked to new forms of being-in-the-world: individuals, groups, society, natural and man-made environments should be dealt with simultaneously, in view of the dynamic and complex configurations intertwining, as donors and recipients, the four dimensions of being-in-the-world (intimate, interactive, social and biophysical). Critical aspects of contemporary environmental and cultural crisis is considered, in view of the need of a conceptual space within which praiseworthy morals and essential capacities are developed to face the problems of difficult settlement or solution in our times.

Key words: education, culture, politics, economics, ethics, environment, ecosystems.

1. INTRODUCTION

Contemporary problems are closely interconnected and interdependent, and cannot be understood and solved within the present context of weakening social bonds and cultural, political and economical clashes (Elohim, 2000), a generous ground for market-place's manipulations, publicity-oriented interests, fragmented academic formats and malicious private maneuvers.

As a syndrome, not a set of separate changes, they reflect the interrelated pressures, stresses, and tensions due to an overly large world population, a pervasive and increasingly systemic environmental impact of economic activities, urbanization, consumerism, and the widening gap between rich and poor, both within and between countries (McMichael, 2013).

The present crisis is a sign of the severe cultural predicament of our times and reflects the deceptive maneuvers and collusions of political and economical dominant groups, a prior disordering of thought, perceptions and values (Orr, 1994), the stronghold of national and international corporate interests, which break through the core of all societal institutions – education, justice, governance.

Deforestation, desertification, global warming, biodiversity losses are linked to powerful economical and political interests, which define every aspect of humanity and nature as part of the market rubric (Irwin, 2007), legitimising business expansion in terms of consumerism and abuse of natural resources¹ - increasing inequalities, violence and poor quality of life throughout the world.

Environmental impact studies should not be treated as a mere formality, development strategies rooted in mega-projects disregard fundamental human needs and ignore the principle of "right relationship", which respects the integrity, resilience, and beauty of human and natural environments as the foundation for a new economic order (Brown and Garver, 2009).

In "asymmetrical societies" (Coleman, 1985), large differences in power between natural persons and legal persons (individuals and enterprises), allow business corporations to have a substantial influence on public policies and State affairs, as they diffuse responsibility along hierarchical structures and safeguard their shareholders as mere investors in the financial markets².

Privatisation and deregulation reduce the role of governments at national and international levels, and hence weaken mandatory powers over environmental standards; the dominant approach to the environment by corporate, state and international authorities shows that present conditions are outcomes of the undesirable impacts of overall policies and market conditions (Robbins, 2004).

The current "world-system" has boundaries, structures, member groups, rules of legitimation, and coherence; "it is made up of the conflicting forces which hold it together by tension and tear it apart as each group seeks to remold it to its advantage; it has a life-span over which its characteristics change in some respects and remain stable in others" (Wallerstein, 1974: p. 347-57).

Trying to solve isolated and localized problems, without addressing the general phenomenon (which has the conditions to solve specific problems), is a "conceptual error" (Volpato, 2013). The purpose is to move away from human behaviour approaches (Shove et al, 2012) and techno-economic paradigms that obscure government's role in sustaining unsustainable economic institutions and ways of life.

The conceptual direction and the legitimacy of development strategies should be based on a comprehensive framework; instead of surrendering to specialisation and fragmentation, a "new global covenant" should be carefully planned (Held, 2004), emphasizing social justice, physical, social and mental wellbeing and the equilibrium between natural and built environments.

¹ Our resources are being rapidly transformed into useless garbage, some of which is obvious to the naked eye, but most of which escapes awareness. The smaller portion can be seen in garbage dumps and other visible waste. By far the larger portion can be thought of as "molecular garbage" - consisting of the vast quantities of tiny particles that are daily spewed out into the earth's air, water and soil (Robèrt, K.H. (1991).)

² The current global corporate economy subordinates environmental standards to what are presented as "requisites" for "free" global trade and proprietary "rights" by the World Trade Organization (Sassen, 2010); multi-actor, multi-level and multi-sector structures interfere with state steering and governmental practices throughout the world. Mainstream environmentalism is dangerously obsessed with getting people to 'save the planet' while doing other things - shopping, looking cool, or just mindlessly getting on with with life (Crompton, 2013).

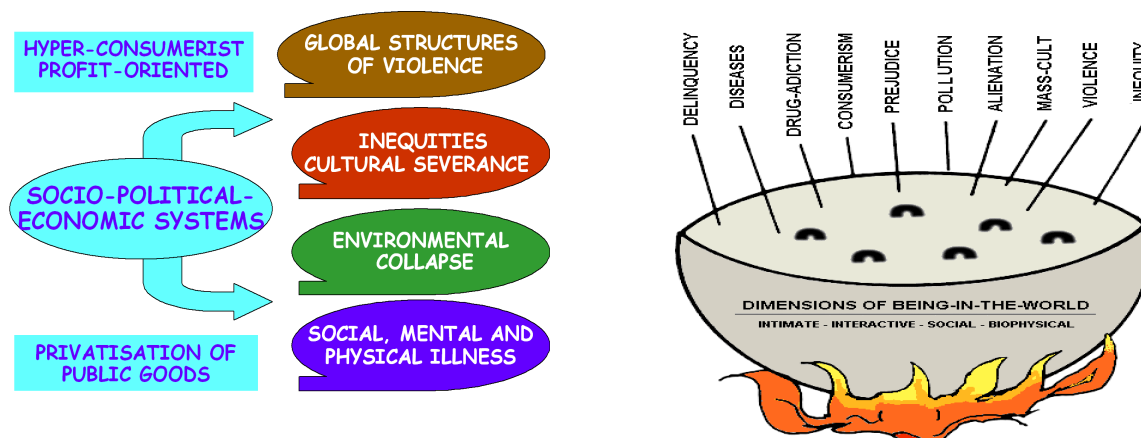


Fig.1: Current socio-political-economical systems are detrimental for the quality of life.

Fig.2: The real problems lie deep inside the boiling pot, not in the bubbles (effects).

The environmental crisis (fig. 1) “stems from the prevailing power-driven ethos, the anomic individualism, which divert human concern into technological invention, scientific advancement, and unlimited material consumption and production” (Orhan, 2003). The focus should not be on the “bubbles” of the surface, (consequences), but on the configurations deep inside the boiling pot (fig. 2).

These bubbles have dynamic properties (Pilon, 2009), they co-exist among many others in a cluster, as the collection of all factors affecting health, environment, working conditions, economy, education, culture, etc.; each bubble is influenced directly by a companion bubble's interface but also indirectly through the companion bubble's connections to other surfaces (Wilcox 2007).

Cultural, educational, social, economical, environmental and health problems cannot be sorted out by segmented projects, without considering micro, meso and macro relationships. Like bubbles in the surface of a boiling pot, segmented problems are symptomatic of the assemblage of political, economical, social and cultural variables that should be dealt with altogether.

The role of law, the work of attorneys and judicial courts is hampered by the very system in which they have their insertion, "legal" and "illegal" strategies are mixed together in the assemblage of political and economical interests; powerful lobbies, deeply ingrained in the public administration, favour mega-projects with intensive use of resources, rather than the appropriate technologies.

Beyond profit-searching motives of business corporations and other vested interests, transboundary issues like human rights, pollution, deforestation, drugs and criminality impose a significant reconfiguration of state control and political authority, in which power must be shared on ethical grounds in a transnational basis, by transnational organisations.

To cope with environmental collapse, environmental justice should be extended beyond national boundaries, beyond political and economical interests of malicious consortia and corrupted or lenient governments, which easily comply to ill-intentioned propaganda and lobbying by influential groups and questionable business organizations.

Territorial and jurisdictional aspects are fundamental in terms of governance (Ashley, and Crowther, 2012); political and cultural forces blunt our response to the growing complexity of ecological catastrophe (Buell, 2003), which cannot be understood or resolved without dealing with deep-seated problems within society and its amoral political-economical system (Bookchin, 1982).

Legal procedures will not forestall the planned obsolescence of products designed for the dump, nor the perceived obsolescence fostered by propaganda induced consumerism, which arise in people the sensation that products should always be substituted by new ones, buying and disposal converted into rituals of a culture that makes consumption a way of life (Foster and Clark, 2012).

Transboundary and global environmental harm present substantial challenges to state-centered (territorial) modalities of accountability and responsibility; the globalization of environmental degradation has triggered regulatory responses at various jurisdictional scales to address “accountability deficits” in global environmental politics” (Mason, 2008).

Cultural and educational policies succumb to the prevailing political and economical interests, converting the population into consuming subjects, appropriating their thoughts and bodies as commodities of influential people and questionable business corporations, which use propaganda, lobbying and corruption to intensify profits and secure their hegemony over public affairs.

A proper cultural environment, a common ethical ground, is more important than the best legal prescription: the focus is not consumer’s behaviour, but the economic and political framework, its interdependency with the marketing and advertising impact of mass-media in public opinion about products, services and lifestyles, its social and cultural embeddedness.

The emphasis on human rights, rather than collective political action, only reiterates individualistic approaches (Harvey, 2005). The fundamental change is economic, social, cultural and political; priority should not be given to growth, but to sustainability, human development, order and stability in civil society: if one group gets richer, others can be used and discarded (Bown, 2007).

“Social inclusion” only accommodates people to the prevailing order and do not prepare them to change the system (Labonte, 2004); once “included”, a new wave of egocentric producers and consumers (Chermayeff and Tzonis, 1971) reproduce the system responsible for their former exclusion, increasing the abuse of nature in the name of “progress”.

Growth, power, wealth, work and freedom must acquire new meanings (O’ Sullivan, 1987). The accumulation of wealth to the exclusion of other components of the development process (safety, health, education, equity, ethics, justice, beauty) has led to natural devastation and severe social and cultural impacts, with high levels of crime and violence in the so called “emerging countries”.

Privatisations, deregulations, market-oriented reforms, resulted in relinquishing state's control to the huge power of private sectors; in this context, new technological waves will not rescue a devastated environment, nor relieve the effects of inequities, uprootings, displacements, hunger, violence, ecological insults and deep social division (American Anthropological Assoc., 2005).

When the political, economical, cultural and ethical disarray normalises and condones inequities, transgressions, violence and atrocious behaviours, the "philosophical" questions

of ethical, moral and overall civic education are frequently left aside, while information and communication technologies are presented as a panacea for all evils, instead of a resource or another instrument.

Within one generation, the gap due to the lost of value systems (specially religion and ideology) has been filled by the prevalent ideology of the market; in the lack of an alternative value system³, religious sects, specially in the urban areas, reinforce the idea that political and economical success, in the current system, is a sign of divine blessing towards the chosen ones.

In many problem-ridden, economically unequal and intrinsically violent cities of emerging countries, most people become uninvolved in civic life due to the outspread criminality (Baiocchi, 2005): while some enjoy life in fortified enclaves most of the city dwellers live in makeshift slum housing, without the basic social services (health, education, police authority, etc.)⁴.

This goes along with turmoil, uncertainty, lack of confidence, fear and impotence (Rotmans and Loorbach, 2009). The more the city concentrates the necessities of life the more unlivable it becomes; the notion that happiness is possible in a city, that urban life is more intense, pleasure enhanced, and leisure time more abundant is only mystification and a myth (Lefebvre, 2003).

Development proposals, technological “solutions”, often ignore social, cultural and environmental impacts, binding nature as natural capital with financial domains (Sullivan, 2013); they demand even more resources and increase pollution and waste without changing the irrational system of production, transport and consumption that plagues the globalised world⁵.

Advances in applied ethics should be made by thoughtful and innovative thinkers in any activity area; specialists of several professions who work together, within a multidisciplinary approach, must base their action on some common principles of ethics and on an understanding of each others' obligations, responsibilities and professional standards (Soskolne, 1997).

Development as plunder (White, 1999; Trainer, 2000), implies systemic risks (Giddens, 2001), global catastrophes (Bostrom, 1997), simultaneous crisis formation (Harvey, 2006),

³ Environmental culture boldly unmasks the institutional and systemic violence of our culture and reveals how our culture's life-destroying practices and ethical and spiritual bankruptcy are closely linked to our failure to situate ourselves as ecological beings (Plumwood, 2002). Heinzerling & Ackerman (2004), criticize the use of cost-benefit analysis in setting environmental policy, on the ground that there is a profound mismatch between ethical values and economic valuation. Teaching ethics do not thrive in highly corrupt societies.

⁴ Poor quality of life, urban violence, urbanization processes governed by real estate interests, concentration of jobs in distant areas, are inextricably intertwined. Nothing more visibly reveals the overall decay of the modern city than the ubiquitous filth and garbage in its streets, the noise and massive congestion that fills its thoroughfares, the apathy of its population toward civic issues and the ghastly indifference of the individual toward the physical violence (Bookchin, 1979).

⁵ Who decides what is information and what is lobbying for money? Promoters of multi-billion dollar development megaprojects systematically misinform parliaments, the public and the media in order to get them approved and built; they often avoid and violate established practices of good governance, transparency and participation in political and administrative decision making (Flyvbjerg, B., Bruzelius, N. and Rothengatter, W., 2003).

global and integral accidents (Virilio and Turner, 2005), total risk of catastrophe (Ewald, 1997), general disaster (Massumi, 2003), the worst unimaginable accidents (Beck, 2007).

If pressures on systems steadily increase, “catastrophic bifurcation” can appear without obvious early warning signals, and the resulting changes are always difficult to reverse; understanding how such transitions come about in complex systems such as human societies, ecosystems and the climate is a major challenge (Scheffer et al., 2001).

“Sustainability” based on capital and technology, cannot be a substitute for the resources drawn from the natural world: “strong sustainability” entails containing population growth and curbing consumption, meeting the needs of the current generation as opposed to their demands and living within the productive capacity of nature (Layzer, 2008).

Development must be based on the satisfaction of fundamental human needs, on growing self-reliance, on the construction of organic articulations of people with nature and technology, of global processes with local activity, of the personal with the social, of planning with autonomy, and of civil society with the state (Max-Neef, 1991).

Weak public institutions and deeply entrenched networks act together to prevent accountability, funneling finance and influence along unofficial channels for the benefit of corrupt groups; politicians participate in governmental processes primarily to secure and retain access to personal enrichment at the expense of the public good (Whitton, 2009).

Impersonal institutions and formal rules, creating trust at systemic (versus idiosyncratic) levels and reducing individual marginal transactions in a relationship-based regulation system, is mandatory to a major institutional change: institutions for risk-sharing at a systemic level decrease individual risk and allow longer time horizons” (Meisel, 2004).

Institutions provide the rules of the game in society, the humanly devised constraints that shape human interaction (North 1990); they stabilize the behavior and interaction of agents, create predictability and decide how authority is constituted, exercised, controlled, and redistributed (March and Olsen, 1989).

Environmental issues cannot be assessed in abstraction from the questions of wealth and power and the divergent priorities which beset actual politics (Rabkin, 2008). Private consumption at the cost of amenity and future is not a necessity of nature; it is to a large extent a cultural activity linked to the emergence of the knowledge economy, “with returns in the form of profits instead of wages” (Huppes, 2008).

Cross-cutting programmes on sustainable development imply a worldwide change of focus and procedures in different areas of production, distribution, consumption and discard. This is not only a matter of education⁶, but of governance and societal organization against entrenched economic and political forces that are too powerful to succumb to a direct attack by “civil society” or “global citizens movements” (Winston, and Edelbach, 2014).

⁶ “The devolution of responsibility for sustainability to citizens, in their roles as consumers on the free market, has failed to produce significant change; even those most committed to sustainable living confront structural barriers that they do not have the power to overcome” (Isenhour, 2010). People no longer learned their cultural identity from their family, schools, churches and communities but instead from “a handful of conglomerates who have something to sell” (Gerbner, 2001).

2. AN ECOSYSTEMIC APPROACH FOR PUBLIC POLICIES, RESEARCH AND TEACHING PROGRAMS

Understanding a problem is to understand the relationships between the events and the context in which these relationships occur. People with different values interpret the "same" evidence in different ways (Kahan, 2012), the information has a minor role compared to emotions, values and ethics (Etzioni, 2003; Dietz, 2011). The enlightenment ideal that "informed" people opt for the common good is still a philosophical ideal.

Ecological behavior is linked to positive social involvement: in contrast to "extrinsic" goals, like money, image and status (which are means to other disputed ends), "intrinsic" goals are inherently gratifying to pursue, like self-acceptance (growing as a person), affiliation (having close, intimate relationships), community feeling (helping the world be a better place) (Kasser & Ryan, 1996).

Change depends on a sufficient critical, collective and connective intelligence of systematic and systemic aspects of organisational change: there is a tendency for significant challenges (such as education for sustainability) to be understood and accommodated within the norms of the existing system⁷ - rather than change the system to be congruent with the challenge (Sterling, 2009).

Education as a whole, and environmental and sustainability education in particular, are limited in their ability to make a positive difference to assure a sustainable future (Sterling, 2003). Whilst environmental education in schools help to normalise environmental values, children will take cues for appropriate behaviour from the media, peer group and society as a whole (Bedford, 2002).

Education is both a great hope and a great danger: it can develop questioning, innovation and creativity, enable to recognize the powerful forces that drive unsustainable living and develop self-confidence and organizational skills, but it can also play the opposite role, deadening curiosity and innovation; encouraging acceptance of unsustainable living as being normal; and to passively wait for others to take action (UNECE, 2013).

Education cannot be thought apart, it does not prosper in a context of social fragmentation and weakening social bonds: creation of choices, generation of capacities, development of motivations depend on cultural, social, political and economical aspects; the quality of institutions and incentive structures are more critical than the quality of individual motives and morals (Krol, 2005).

Preparing people to assume their positions in society, both as professionals and citizens, cannot be reduced to ritualistic actions, such as voting or paying taxes, nor can it encourage an uncritical ideological allegiance to the "free-market", transforming schools in training centers for compliant egocentric producers and consumers, instead of centers of critical inquiry and institutional change.

In the ecosystemic approach, instead of trying to adapt to droughts, floods, air pollution, land degradation, deforestation and rising sea levels, that inevitably will lead to overall catastrophe, it is posited that we should deal with the present paradigms of growth, power, wealth, work and freedom embedded into the cultural, social, political and economical institutions.

⁷ Monetizing nature, marketization of environmental "goods", tends to undervalue non-quantitative social, aesthetic, and ethical aspects of the natural world (Unmüßig, 2014). Data revolution is too technocratic and if we don't address power dynamics behind this 'revolution' it will not be transformational (Frecheville, 2014).

Table I: Dimensions' equilibrium in the ecosystemic model of culture

	<i>Donors</i>			
<i>Recipients</i>	INTIMATE	INTERACTIVE	SOCIAL	BIOPHYSICAL
INTIMATE	Creativity	Support	Services:	Vitality
INTERACTIVE	Altruism	Teamwork	Alliances	Niches
SOCIAL	Citizenship	Partnerships	Organisation	Spaces
BIOPHYSICAL	Care	Defence	Sustainability	Equilibrium

Table II: Dimensions' disruption in the non-ecosystemic model of culture

	<i>Inflictors</i>			
<i>Victims</i>	INTIMATE	INTERACTIVE	SOCIAL	BIOPHYSICAL
INTIMATE	Solipsism	Subjection	Neglect	Harm
INTERACTIVE	Egotism	Fanaticism	Co-opting	Dispersal
SOCIAL	Abuse	Corporatism	Tyranny	Extinction
BIOPHYSICAL	Injury	Damage	Spoilation	Savageness

Table III: Intertwining the four dimensions of the world in the diagnosis and treatment of the problems

Stages of Process	INTIMATE	INTERACTIVE	SOCIAL	BIOPHYSICAL
Diagnosing the Events	Subject's Cognitive and Affective Status Existential Control	Dynamics of Primary Groups Communities' Organisation	Cultural Aspects Social Structure Public Policies Services	State of the Natural and Built Environments Beings and Things
Eliciting Favourable Changes	Subjects' Cultural, Emotional and Educational Development	Improving Relationships Social Networks Community Building	Public Policies Law Enactment Social Control Civic Action	Quality of Natural and Man-Made Environments Beings and Things
Evaluating the Process of Change	Well-Being Awareness Resilience Creativity	Proactive Groups Community Solidarity Cohesion	Social Movements Well-Fare Policies Social Trust Citizenship	Equilibrium of Natural and Man-Made Environments

Creation of choices, generation of capacities, development of motivations depend on the configurations formed by the assembly of four dimensions of being-in-the-world (Pilon, 2010), *intimate*, *interactive*, *social* and *biophysical*, as they combine to induce the events (deficits/assets), cope with consequences (desired/undesired) and contribute for changes (potential outputs).

The equilibrium (table I) or disruption (table II) between the different dimensions are linked to opposite models of culture (ecosystemic or non-ecosystemic); the process of change encompasses a synchronized work with the four dimensions of being-in-the-world⁸, considered altogether in view of an integrated approach to public policies, research and teaching programmes (table III).

Relationships with fellow beings encompass the concepts of group and grid: the former refers to the clarity of the boundaries around a group to which people belong; the latter to the strength of the rules which govern how people relate to one another: hierarchical societies with strong ties score highly on group and grid; individualist or market-driven ones are weak on both (Douglas, 1996).

⁸ "Being-in-the-world" encompasses four modes of existence (Binswanger, 1963): man's relationship with himself (*Eigenwelt*); man's relationship with his fellow beings (*Mitwelt*); man's relationship with overall society (*Menschenwelt*); man's relationship with his environment (*Umwelt*). Interaction requires that actors be aware of each other's actions, and that they adjust their own behaviour (and possibly their own goals), taking the behaviour of the others into account (Hanneman, and Riddle (2005).

In this sense, the *United Nations Decade for Education for Sustainable Development* emphasized critical thinking and problem solving, interdisciplinary and holistic multi-method, values-driven approaches, encompassing environmental principles, social awareness, ethical dimensions, economic prudence, confidence and participatory decision-making (Lindberg, 2005).

Analysis only explains how the pieces of a system work, but synthesis is essential to understand a system and the interactions between its parts: the appropriate end of a social system is development, not growth; arguing about values is useless, but realizing the significant role values play in judgments lead to more constructive discussions and decision-making (Ackoff, 2010).

To create awareness and capabilities beyond schemes of thought, feeling and action, subjective and objective realities should be entangled, creating an “excess of meaning” (Gadamer, 1977), encompassing the alien that we strive to understand and the familiar that we take for granted (fig. 3), which implies a process of socialisation, externalisation, combination and internalisation (Nonaka and Konno, 1998).

A population must occupy a "semiotic niche" and be embedded in the same “semiosphere” (Kull 1998), as complex and dynamic systems to reason and make decisions; these are “mental models”, internal representations of external reality, through which information is filtered and stored and individual behaviours consolidated (Jones, 2011).

In a socio-cultural learning niches⁹, problems associated with the individual and collective project of life can be unveiled and dealt with by heuristic-hermeneutic processes; intermediary objects (curious things, images depicting everyday life), can be presented to the participants to generate awareness, interpretation and understanding beyond established stereotypes.

The contributions of the participants can be analysed both from a thematic and an epistemic point of view: the *thematic* analysis refers to “what”, to the emphasis and inclusiveness of the different dimensions associated with the experience (contents); the *epistemic* analysis refers to “how”, to the structure of thought of the individuals in view of subject-object relationships¹⁰.

The methodology is participatory, experiential and reflexive; “reality” is revealed in a specific space-time horizon of understanding, feeling and action, subject-object relationships are unveiled (intimate dimension), contents are shared with the participants (interactive dimension), setting the ground for new paradigms for being-in-the-world (social and biophysical dimensions).

⁹ Niches are new structures, a small core of agents that emerges within the system as the incumbent for innovation; emergent structures stimulate further niches’ development and niche-regimes (Frantzeskaki and Loorbach, 2009); they are defined as protective spaces for “pathbreaking innovations”, having three functions in wider transition processes: “shielding, nurturing and empowering” (Smith and Raven, 2012).

¹⁰ 1) *Appropriation*: construction of new paradigms for being-in-the-world, cognitive, affective and conative changes; 2) *Common-sense*: conformity to established, stereotyped, common sense conducts, without further questioning. 3) *Scholarlike*: reduction to logical categories and frozen schemes to achieve closure, classifying and describing; 4) *Dependency*: reliance on exterior authority to qualify own experience; alienation, bewilderment, confusion, inconsistency. 5) *Resistance*: opposition to being involved, failure to see any meaning in the experience. 6) *Dogmatism*: adherence to fixed paradigms and ways of being-in-the-world.

Table IV
Statements offered by the participants after exposure to selected objects

<p>Group A</p> <ol style="list-style-type: none"> 1) Half shell; organic/inorganic; nature/human made; solid/flexible. 2) Found objects; shell/stones; artefacts; a collection of diverse objects not belonging to any category. 3) Objects of nature are more beautiful and interesting in form than are manufactured articles - but the metal caps may suggest that nature provides in many ways - even when unaesthetic. 4) Sharp and smooth texture; manipulate. 5) Contents: world, rocks from ocean, trash caps, city from modern society, black stones, forest plant; the contents represent global communities: rural, urban, forest, islands. 6) Three black seeds, three elastically connected bottle caps, three white river stones and a heart shaped, dried, open seed pot lay in a white rectangular open top plastic container; remains of living plants, time worn rocks and man-made metal objects represent earth materials. 7) Different shapes, sharp objects, smooth, multi-national corporations, dry. 8) Natural food and junk food; moderation - nature's way and mass consumption; voluntary simplicity, consumerism. sustainability, extinction/destruction. 9) I wonder what type of music these items make; was/is the heart-shaped thing good to eat; what are the little "black beans", how were the holes drilled in the pop tops? what kind of soda are the two unfamiliar? <p>Group B</p> <ol style="list-style-type: none"> 1) Box having within: three bottle caps tied up by an elastic string (it may suggest interaction, integration, interpersonal communication, horizontality); a seashell, three pink stones (it may suggest compartment, non integration between parts); a ribbon of paper with the inscription: how many parts have a grain? (it may suggest the type of information discussed interaction). 2) This box (and maybe others) remembers me of my childhood and a beloved aunt, who kept photos and others belongings in it. I feel the smell of sea in the stones and in the alga. I don't know how many parts there in a seed, but nevertheless it would contain the production of life. The link between the objects means the link with other people and the basis of social relations. "Keeping" in the box means to keep people, to keep carefulness, preserving relations that became intense. 3) The box deceived me, I expected much for so little. I thought it cold, it is not; heavy, but no. I don't like it, it is smooth, opening it I thought of a jewel-case; new sensations: white little stones, similar to those in the river where I work; united bottle caps, but for children.. 4) Curiosity, boredom, impatience, beach, sea, chilled water, patience, questions and answers, sand, anxiety, to solve, "Maria Chiquinha", children songs, China, Japan, grains, quantity, immensity, plenitude, rest, tiredness. 5) Feeling of anguish in view of the time; inside each of us there are simple and complex things; their development will help us to grow as people.
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The objective is not to solve taken for granted problems, but to unveil and work with the dynamic and complex configurations that originate them: instead of being trapped into the path-dependency of pre-established problem-definitions¹¹, the heuristic-hermeneutic work¹² develop a capacity to ask wider questions, reframing the problems in the process, in view of the four dimensions of being in the world (table IV).

¹¹ In view of the precautionary principle, eight criteria were selected by Klink & Renn (2001) for evaluating risks: probability of occurrence, extent of damage, incertitude, ubiquity, persistency, reversibility, delay effect and potential of mobilization.

¹² 1) *Intimate Dimension*: subject-object relationships are unveiled by images or objects selected to catch the eye (bottle caps linked by a string, etc.) and participants register their perceptions in a non-identified piece of paper; 2) *Interactive Dimension*: statements are distributed out of sort and read aloud, statements are shared, compared and enriched; *Social and Biophysical Dimensions*: present and future forms of being in the world are analysed in view of ecosystemic and non-ecosystemic models of culture, encompassing the natural and man-made environments, the relationships between ecosystems, beings and things.

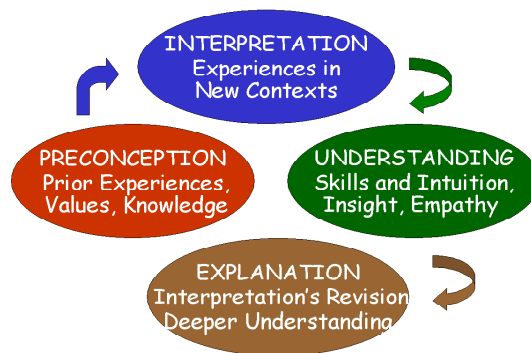


Figure 3: Heuristic-hermeneutics processes in the socio-cultural learning niches.

2.1 A framework for the transition to an ecosystemic model of culture

“Environmental education” and “development education” needs the construction of a “new story for mankind”, enhancing, human rights and justice, local and global citizenship, supporting the efforts to understand and transform the social, cultural, political and economic structures affecting life at personal, community, national and international levels (Irish Aid, 2007).

Education and mass-media are affected by vested interests, intolerance and violence; news media institutions, due to political economic pressures, are bound to the dominant paradigm and its key actors. To bridge the gap between human design and the ecologically sustainable systems of nature (UNESCO-EOLSS, 2008), we need to redesign technologies and social institutions to counteract the current paradigms¹³.

Although collective practices, according to evolutionary theories of change, may be selected by the social environment rather than by individual dispositions, cultural evolution is also linked to the role played by human intervention, which entails intelligence, purpose, calculation, planning, learning, arguing, persuading, discussion, and argument (Nelson, 2005).

In view of epistemological and ontological dimensions for knowledge creation (Nonaka, 1994), teaching for meaning, in a cultural context that values only information transmission, is one of the main challenges for education in our times (fig. 3); to salvage the realm of character and moral development, the present ethos should not center on individual good and individual value alone, but on the environment and the public space¹⁴, as a global system (Boostrom, 1997).

¹³ Economic groups that support “development” strategies are the same worldwide: banks, agribusiness, contractors, mining companies; in the teeming cities of today buildings tower to the sky while problems are getting worse: environmental catastrophes, criminality, corruption, vested interests: “sustainable development have become part of the so-called problem-industrial complex: societal regimes that are dependent on sustaining ‘problems’ such as waste production, sickness, fossil energy and so on” (Loorbach, 2014)..

¹⁴ Global governance can only be legitimized from ethical principles, in which the character of people and organizations constitutes the fundamental element for the changes, not just by the development of capabilities, knowledge and skills (Paehlke, 2004).

It includes education for citizenship, that it not reduced to formal or ritualistic actions, *v.g.*, voting or paying taxes, nor can it encourage an uncritical ideological allegiance to the "free-market", transforming schooling in training centers for a compliant work force, which takes for granted the perverse life style of "egocentric producers and consumers" (Chermayeff and Tzonis, 1971).

The industrial culture divides the person into parts and the world into fragments; environment is one whole, it is not cut up into specialties, disciplines and departments (Drengson, 1995), it requires boundary-crossing skills, abilities to change perspective, to cope with complexity and to synthesize different disciplines or areas of expertise in a critical and creative way (Fortuin et al., 2008).

Environmental awareness is not simply awareness of the natural environment but also of social, economic, cultural and other dimensions; it requires 'dynamic' skills to discover and study the environment and find solutions, capacity to discern the relevant dimensions of a situation, readiness to accept responsibility, initiative taking, independence, commitment (Hugonnier, 2008).

It means reorganizing to produce more of the things that people need — like food, shelter, clothing, education, security, health care — and less of the costly things they do not — like military hardware, pollution, traffic jams, useless chattels and crime¹⁵. Failures in governance at many levels, and the resulting suspicion and mistrust, clearly also play a role in the current state of affairs¹⁶.

Rational decision-making based on "facts" is no longer defensible; emotions, values and ethics play a much stronger role than mere information, education requires a knowledgeable and congruent teaching and learning ground, a core element for comprehension, preparedness and action, abilities to participate in, influence, share and control the learning process (Tilbury et al., 2005).

People with different values draw different inferences from the same evidence (Kahan et al., 2012); development, and utilization of concepts, tools and practices must take into account the collective forms of being-in-the-world; citizen-consumer's potential to alter natural consuming habits, to 'shop ethically', 'care for the environment' and 'think glocally' depends on social motivation rather than rational choice (Klintman, 2012).

Culture define the knowledge of the past and the expectations for the future: it shapes individual and collective identities, affect the impact of innovations and social change, construct the social meanings of technologies, create new boundaries, new forms of social

¹⁵ We should not persist in speaking about development within the current political-economic frame of reference, but persist in speaking about changing the current political-economic frame of reference; Gehl (1996) distinguishes between necessary/functional activities, which take place regardless of the quality of the physical environment, and optional/recreational activities and social activities, which depend to a significant degree on what public places have to offer and how they make people behave and feel about them; different values are at play, especially cooperation not competition, and frugality and self-sufficiency, not acquisitiveness and consuming (Trainer, 2010)..

¹⁶ Monetising or valuing nature turns it into a commodity, the economic invisibility of resource depletion and pollution leads to systemic failures in all public spheres of decision, green innovations and new practices (in behaviour and policy) face an uphill battle, played out on economic, technical, political, scientific, and cultural dimensions: transport, energy, agri-food systems, stabilized by vested interests and favourable institutions lead to path dependence and entrapment: (Sustainability Transitions Research Network (2010).

exclusion and marginality, frame experience of space and place in everyday life and individual and collective identities (*Sociology of Culture Conference*, 2010).

Beyond the objectivistic description of facts or dissemination of information to the public, acceptance of ethical norms, peace building, environmental equilibrium requires a host of ethically interpreted and ordered social experiences, a capacity to develop morally relevant interests as the bases of rights-bearing, a broad, universally rationalised cultural knowledge (Znaniecki, 1935).

Trans-disciplinarity does not only combine views or merge ideas, but questions the “givens”, it forces the “detachment” from ones’ familiar discipline, culture, and belief, which is not a denial of initial identities, nor complete attachment to the alternative: “it is a new awareness, a distance from the world that comes before any type of analysis you may wish to undertake” (Takashi, 2010).

What are the prospects of education as a whole, and environmental and sustainability education in particular, regarding the severe threats faced by today’s world? Identifying complex configurations that predict particular outcomes asks for an analysis of assumptions, contentions, consensus and conflicts, which are essential to the definition of the problems and to build new paradigms to live better in a better world.

“Education for sustainability” includes international development, economic development, cultural diversity, social and environmental equity, human health and wellbeing. In order to deal with sustainable development in both environmental and cultural terms we need a theory of cultural sustainability, since the concept of sustainability implies a holistic approach to modelling economic, biological and cultural processes (Throsby, 2008).

Media “popularizers” should draw attention to the “issues on environmentalism and culture as significant and important in symbolic and visual terms, emphasising different incentives for taking positive action, and getting institutional support to ensure both legitimacy and continuity in the process” (Hannigan, 1995). Well-being is not simply an individual attribute, but a profoundly social relational phenomena¹⁷.

University teaching is vital in maintaining a social conscience based on self-awareness and self-transformation, for preparing people to assume key positions in society, both as professionals and citizens; the discussion of current problems should transcend traditional disciplines and national boundaries, in the light of global perspectives, international cooperation, transdisciplinary research and teaching programmes.

Despite the number of institutions addressing environmental degradation and sustainable development, environmental problems have been exacerbated rather than solved; international environmental governance lacks co-ordination and is at odds with other areas of global governance, notably economic and development governance (United Nations University, 2010).

¹⁷ It would take only three to five percent of elites at the top of influence (military, economic, political, educational and cultural: media, arts, entertainment) to shift the mindset of the larger population (Collins and Makowsky, 2009). Due to the process and resulting outcomes of the ascendance of business interests, values and models in public policies, research and teaching programmes (“corporatization”), the mediaeval custom of selling ‘indulgences’ is retrieved today by paying money to make up for ‘green sins’, for ‘climate compensation’ (instead of eliminating social malpractice from production and supply chains).

	INTIMATE	INTERACTIVE	SOCIAL	BIOPHYSICAL
DIAGNOSIS OF THE EVENTS	SUBJECTS' COGNITIVE AND AFFECTIVE ACTUAL STATUS	GROUPS' AND COMMUNITIES' DYNAMICS AND COHESION	PUBLIC POLICIES LAW ENACTMENT CITIZENSHIP PARTICIPATION	NATURAL AND MAN-MADE ENVIRONMENTS BEINGS, THINGS
ELICITING NEW EVENTS	DEVELOPMENT OF SUBJECTS' EXISTENTIAL SELF-CONTROL	DEVELOPMENT OF GROUPS AND PRO-ACTIVE COMMUNITIES	DEVELOPMENT OF PUBLIC POLICIES AND CITIZENSHIP	PROMOTION OF NATURAL AND MAN-MADE ENVIRONMENTS
IMPACT ON EACH DIMENSION	ENHANCEMENT OF SUBJECTS' WELL-BEING	ENHANCEMENT OF GROUPS AND COMMUNITIES	ENHANCEMENT OF POLICIES AND CITIZENSHIP	ENHANCEMENT OF OVERALL ENVIRONMENT

Figure 4: The process of change implies a synchronized work with the four dimensions.

The development and evaluation of teaching programmes, research projects and public policies should contribute for the transition from a non-ecosystemic to an ecosystemic model of culture, taking into account the configurations formed by the ensemble of the four dimensions of being in the world in the origin and denouement of the events, in terms of a forecasting framework (fig. 4).

The process of change must be associated with an ecosystemic model of culture, leading to public action to transform current development policies and structures that wipe out biodiversity, destroy natural and built environments, abuse landscapes and resources, demolish living-spaces and generate unmanageable refuses that menace the future of life on Earth¹⁸.

To bring about new ways to understand things and create a critical capacity to operate change in the forms of being-in-world, new paradigms of growth, wealth, work, power and freedom (O' Sullivan, 1987) should be embedded into the educational, cultural, economic and political institutions, mediated by teaching and learning socio-cultural niches, with its proper characteristics and semiosphere.

2. CONCLUSIONS AND RECOMMENDATIONS

The ecosystemic approach, as an integrated theoretical and practical holistic proposal, encompasses different domains - environmental sciences, social sciences, politics, economics, anthropology, psychology, education, public health, governance, ethics – and can be applied to different problems of difficult settlement or solution in the contemporary world.

¹⁸ Atkinson (2015), combines agent-based modelling (capable of capturing heterogeneous attributes, behaviours, and interactions of individuals) and system dynamics modelling (which captures population-level, ecological influences, and whole system dynamics). To moral and democratic education (Lind, 2003), more important than the need for a radically different economy, is to change current values, notably the present commitments to competition, individualism and acquisitiveness, and the conception of progress (Trainer, 2001). Market induced policies conceive fashion stylists as relevant as Shakespeare, a footballer, a value equal to Michelangelo, a rapper, not less than Stravinsky; this cultural relativism is the result of a demagogic, pseudo democratizing cultural policy, which does nothing more than to dissolve culture in a "everything is culture"; in the absence of the State, culture is reduced to a mere commodity (Finkelkraut, 1987).

As by-products of the prevailing models of culture (ecosystemic or non-ecosystemic), ethics, education, culture, natural and man-made environments, physical, social and mental well-being should be supported by the societal structures and integrated in an overall project of quality of life (not treated as separate objects of segmented programmes).

Public policies, teaching and research programmes, nowadays segmented in different domains, should consider the configurations intertwining the different dimensions of being-in-the-world, strengthening their connections and sealing their ruptures, in view of their dynamic equilibrium; as a result of the posited proposal it is expected that public policies, research and teaching programmes would:

- 1) define the problems in the core of the “boiling pot” in view of a holistic, ecosystemic framework, instead of reducing them to the bubbles of the surface (effects, fragmented, taken for granted issues);
- 2) combine the four dimensions of being in the world (intimate, interactive, social and biophysical) in the diagnosis and prognosis of the events, assessing their deficits and assets, as donors and recipients;
- 3) promote the singularity of (identity, proper characteristics) and the reciprocity (mutual support) between all dimensions of being in the world in view of their complementarity and dynamic equilibrium;
- 4) contribute for the transition to an ecosystemic model of culture, in order to deal with the problems of difficult settlement or solution in the world, as an essential condition for consistency, effectiveness and endurance.

A concerted action by public and private sectors, social organisations, scientific and technical institutions, requires that the various parties cease to defend their vested interests in benefit of a real change in the current world system: instead of taking current prospects for granted, a previous definition of desirable goals and the exploration of new paths to reach them should be adopted.

Can we imagine a world in which wise and impartial international regulators, transnational governance systems, would have the authority to implement the right set of norms and policies to safeguard humanity’s cultural inheritance, natural and built environments, aesthetic and life saving values for future generations?

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About the Author: André Francisco Pilon has an extensive academic and professional career as an Associate Professor, University of São Paulo; as a Psychologist, Court of Justice of the State of São Paulo; as a Director, Health Education Department, Ministry of Health, Brazil, as an Editor-in-Chief, journal *Academus*. His ecosystemic approach for public policies, teaching and research programmes encompasses politics, economics, ethics, social sciences, education, culture, natural and man-made environments, physical, social and mental wellbeing, public health and overall quality of life. He has a long list of peer-reviewed publications and presentations at national and international scientific events in terms of new paradigms of growth, power, wealth, work and freedom embedded into the cultural, social, political and economical institutions. His affiliations include: International Union for Health Promotion and Education, Inter-American Consortium of Universities in Health Education, Centre for Development and Research on Healthy Cities, International Academy of Science, Health & Ecology. Link to public profile and selected publications: https://www.researchgate.net/publication/305700604_Abridged_Curriculum_Vitae
