

Ecological Modernization and Environmental Education: An Approach to Social Change

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ABSTRACT---- *Several approaches have drawn attention to the implications of environmental problems. For instance, estimates indicate that up to 132 million people may fall into poverty by 2030 due to the manifold effects of climate change. This paper focuses on this theme. It aims to discuss the concept of ecological modernization and the development of Environmental Education according to its perspective. Ecological modernization takes into account the structural character of the environmental problematic and provides bases for the development of public policies, such as the environmental education policy. Conclusively, among other analytical considerations, the paper highlights that Environmental Education must develop a conception of ecology that establishes a link between the natural world and the social world, as well as it must also develop an interdisciplinary approach to ecological problems.*

Keywords--- Environmental crisis, ecological modernization, policies, Environmental Education

1. INTRODUCTION

The importance of ecological politics goes far beyond whatever influence green social movements might muster, or the proportion of the vote green parties might achieve, because the hypotheses of environmental collapse is a real risk. Many of the scenarios presented in the Intergovernmental Panel on Climate Change's (IPCC) most recent reports on the natural and social impacts of global warming will take place not in the year 2100 or even 2050. It seems they will occur much sooner than that.

Since the second half of the 20th century, several approaches have drawn attention to the implications of environmental problems. Premonitions of possible global catastrophe were first expressed in the 1960s and soon blossomed into full-blown predictions (Giddens, 1998). The earth's resources, it was proclaimed, are being consumed at a frightening rate, while pollution is destroying the ecological balance upon which the continuity of nature depends. These dire warnings provoked a robust response from critics, who affirmed that indefinite economic growth is possible. They did so mainly on the basis of neoliberal economic theory. In this sense, market principles will ensure that there are no limits to growth. Like others goods, if any natural resource becomes scarcer its price will rise and its consumption will fall. If the price of goods goes down, it means that supply is outpacing demand.

According to this perspective, global warming, for instance, either is not happening, or is natural phenomenon rather than brought about by human activities (Simon and Kahn, 1984). Moreover, it's argued that nature has restorative properties that go well beyond any impact human beings have on the environment. This would mean that nature is always creating new species as well as destroying them. Such a view enthralls the climate change deniers, but it is not defensible. Recognizing this fact means engaging with ideas of sustainable development and ecological modernization.

2. ANOTHER ENVIRONMENTAL IS POSSIBLE: SUSTAINABLE DEVELOPMENT AND ECOLOGICAL MODERNIZATION

Since the publication of the Brundtland Report in 1987, sustainable development has become the dominant concern of environmental groups¹. According to it,

Development involves a progressive transformation of economy and society. A development path that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting. But physical sustainability cannot be secured unless development policies pay attention to such considerations as changes in access to resources and in the distribution of costs and benefits. Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation (United Nations, 1987, p. 41).

In line with this, Brundtland Report provided a definition of sustainable development. But it is a deceptively simple definition. Sustainable development is defined as the capability of the current generation “to ensure that it meets the needs of present without compromising the ability of future generations to meet their own needs” (United Nations, 1987, p. 41). It is not a precise definition, because we don’t know what the needs of future generations will be, or how resource utilization will be affected by technological change.

Thus, the notion of sustainable development must be anchored in other variables. In this sense, sustainable development fits well with the broader one ecological modernization (Giddens, 1998). In this way, ecological modernization can be seen as pulling together several ‘credible and attractive story-lines. That is to say, sustainable development in place of ‘defining growth’; a preference for anticipation rather than cure; equating pollution with inefficiency; and treating environmental regulation and economic growth as mutually beneficial (Hajer, 1995).

Ecological modernization arose as a theoretical approach to describing, for instance, the relationship between economics and innovation, the interventions of the nation-state, the involvement of non-states actors (NSAs) in decision-making in order to achieve desired environmental outcomes and the development of ecological consciousness. Since 1990s, it established its credentials in the environmental policy field, shaping the discourse of environmental politics, being seen “as a theoretical avenue has strong relevance to environmental planning and management in many industrialized countries and as such provides a suitable framework within which to explore policy processes” (Glynn et. al, 2017, p. 22). Activists in the ecological modernization process are non-governmental organizations (NGOs) and civil society in general. In other words, they are non-state actors.

The increasing influence of ecological modernization in development policy has been consistently demonstrated. For instance, in 2008, 61 per cent of voters in Canada backed parties proposing some version of an ecological modernization-type climate response. On the other hand, “a review of the effectiveness of climate change policy measured within the framework of ecological modernization may provide a reference point from which a methodology to operationalize the framework can be developed and qualitative and quantitative research approaches can be applied” (Glynn et. al, 2017, p. 29). In this regard, Esty and Porter (2005) identified a benefit to environmental policy analysis and developed an environmental performance index (EPI) using both qualitative and quantitative measures. This and other scales have been used to determine ‘weak’ and ‘strong’ environmental performance. Tables 1 and 2 present a variety of these.

Table 1: Ecological modernization as viewed by Howes et al. (2010)

	Weak ecological modernization	strong ecological modernization
View of the environment	Economist and utilitarian	Ecological
Role of the state	Market facilitation, information dissemination, minimum state intervention	Substantial state intervention, institutional restructuring, reforms to economic and regulatory policies
Policy approach	Instrumental	Communicative
Decision-making style	Technocratic/closed decision-making by economic and political elites	Deliberative democratic/open, with participation and involvement
Scale of focus	National focus on developed nations	International
EM strategy	Hegemonic	Diversifying, multiple possibilities with EM providing orientation

Source: Howes et al. (2010)

Table 2: Ecological modernization as viewed by Christoff (1996)

Weak ecological modernization	Strong ecological modernization
Economistic	Ecological
Technological	Institutional/systemic
Instrumental	Communicative
Technocratic/neo-corporatist	Deliberative democratic/open
National	International
Unitary	Diversifying

Source: Christoff (1996).

Jänicke (2008) developed a framework of environmental regulation that is a fair representation of the vast middle ground between these representations of ‘weak’ and ‘strong’ conceptions, but it has a leaning to ‘strong’ ecological modernization, according to table 3.

Table 1.3 Ecological modernization and innovation-friendly framework of environmental regulation

Policy objective	Policy content
Instruments are ecological modernization and innovation friendly if they	Provide economic incentives; Act in combination; Are based on strategic planning and goal formulation; Support innovation as a process and take account of the different phases of innovation/diffusion.
A policy style is ecological modernization and innovation friendly if it is	Based on dialogue and consensus; Calculable, reliable, and has continuity; Decisive, proactive, and demanding; Open and flexible; Management oriented.
A configuration of actors is ecological modernization and innovation friendly if	It favours horizontal and vertical policy Integration; The various objectives of regulation are networked; The network between regulator and regulated is a tight one; The relevant stakeholders are included in the network.

Source: Jänicke (2008).

Such analytical tools demonstrate that ecological modernization takes into account the structural character of the environmental problematic. This means considering, for example, that today's environmental conditions are the result of social, political, economic and technological decisions. So, institutions can internalize the care for the environment.

The ecological modernization processes are a reflection of policy environments that are made possible through the “restructuring” of the state. In this sense, a transformation of state environmental policy is necessary. In other words, as Mol (1995, pp. 46-47) said: “from curative and reactive to preventive, from exclusive to participatory policy-making, from centralized to decentralized wherever possible, and from domineering, over-regulated environmental policy to a policy which creates favorable conditions and contexts for environmentally sound practices and behavior on the part of producers and consumers.” Consequently, the state will have to widen the competence of civil law in environmental policy, focus more on steering via economic mechanisms and change in its management strategy by introducing collective self-obligations for economic sectors via discursive interest mediation.

However, besides being a source for policy-making processes, ecological modernization can also be conceived as a social theory. It has parallels to a variety of classical thinkers and influential theories, as Schumpeter's and Kondratiev's notions of long cycles, Polanyi's notion of disembedding and Giddens' four dimensions of modernity. But, in general, it is closer to the work of Ulrich Becker, mainly his well-known writings on reflexive modernization and risk society (Beck, 1992; Beck et al., 1994). Somehow, ecological modernization can be thought of as an instance of Beck's (1992) notion of reflexive modernization - through which modernization can be turned back on to itself in order to address the problems which it has itself created. Likewise, there are some additional similarities in their views about how the role of states in advanced capitalism is changing. Maybe most fundamentally ecological modernization and reflexive modernization agree that solutions to the problems caused by modernization, industrialization, and science can only be solved through more modernization, industrialization, and science.

Although Buttel (2000) understands that the political-sociological theory with which ecological modernization has closest potential relations is the neo-Weberian tradition of embodied autonomy and state-society synergy, I think it is necessary to consider the implications of the concept of risk society. As Giddens states (1998), in contemporary societies, oriented towards the future and saturated with information, the theme of risk unites many others disparate areas of politics: welfare state reform, engagement with world financial markets, responses to technological change, ecological problems and geopolitical transformations. In any case,

Ecological modernization has tended to be appropriated by environmental sociologists, geographers, and political scientists mainly because of its provocative and challenging views about the malleability of the institutions and technological capabilities of industrial capitalism, and because of its observations from environmental science and engineering - that eco-efficiencies can fairly readily be achieved within the framework of continued modernization of capitalism and the application of modern experimental science. Ecological modernization is a new, and in many ways improved, synonym for sustainable development (Buttel, 2000, p. 63).

Basically, ecological modernization is more useful than sustainable development as a macro or overarching framework for thinking about the environmental issues of transformative industry. Countries most influenced by the idea of ecological modernization are the cleanest and greenest of the industrialized nations.

3. ECOLOGICAL MODERNIZATION AND ENVIRONMENTAL EDUCATION

Since the Tbilisi Conference in 1977², it has been established that some of the goals of Environmental Education are, for example, awareness, knowledge, attitudes, skills, and participation. According to the Final Report of the Conference (UNESCO, 1978), the role of education in the face of environmental problems and opportunities is a crucial one. Environmental education should be integrated into the whole system of formal education at all levels to provide the necessary knowledge, understanding, values and skills needed by the general public and many occupational groups, for their participation in devising solutions to environmental questions. On the other hand, it's affirmed that "non-formal education also has an extremely important role to play. The full utilization of mass media for truly educational purposes would also help create widespread awareness and understanding" (ibid., p. 12).

In line with that, the ultimate aim of Environmental Education is to enable people to understand the complexities of the environment and the need for nations to adapt their activities and pursue their development in ways which are harmonious with the environment. Environmental education must also help create an awareness of the economic, political and ecological interdependence of the contemporary world. In this perspective, it is related to ecological modernization approaches, since both try to respond to environmental problems pulling together several credible and attractive story-lines.

So, Environmental Education guided by ecological modernization takes into account that solutions to ecological problems require first a thorough analysis of them. Too often problems have been considered in a partial manner rather than in a holistic one which examines their interrelations. Analyses should start with a classification of types of damage and threats posed to the environment, taking into account the degree of harmfulness to humanity. The environment embraces social and cultural, as well as physical, environment and analyses therefore must take into account interrelations between the natural environment, its biological components and social and cultural factors as well. Moreover, environmental problems are not just those of the detrimental or irrational use of natural resources and pollution. In accordance with the understanding established by the Tbilisi Conference (UNESCO, 1978), and reiterated subsequently, they also include problems of underdevelopment, such as inadequate housing and shelter, bad sanitary conditions, malnutrition, defective management and production practices and, more generally, all problems which stem from poverty.

Surely, models of growth and development must be reconsidered. It has become necessary to distinguish between the essentials and the luxuries for environment as well as development. This is one more reason to advocate a holistic approach to the study of environmental problems which require the contribution of all natural, social and human sciences and the arts for their analysis and solution.

Overall, distinctions have to be made in the role of education, either formal or non-formal, for developing an increased awareness and understanding of environmental problems among the general public (children, youth and adults); for preparing certain occupational groups whose responsibilities bear directly on environmental problems and opportunities (for instance, engineers, planners, architects, medical personnel, teachers, administrators, industrial managers) and for training specialists for research or other work relating to the environmental sciences (ibid). Furthermore, there is a considerable need for innovation in approaches and methods for all of these levels and types of environmental education, and for the exchange of information and experience within and among countries. The perspectives of Environmental Education guided by ecological modernization imply a partnership between governments and non-states actors.

4. CONCLUDING REMARKS

Actually, we can already see several examples of environmental collapse. If environmental policies are not developed, in the coming decades the effects of desertification, water shortages, and the food crisis will have a profound worldwide, especially in the poorest parts of the globe. The poor will have more difficulty finding reliable alternative sources of water and food, as well as gaining access to medical care and emergency help in case of natural disasters. In this sense, the effects of Hurricane Katrina on New Orleans, in 2005, serve as a highly symbolic warning.

Faced with this situation, this paper pointed out that ecological modernization provides promising bases for the production of environmental policies and, at the same time, it emphasized the perspective according to which the notion of

sustainable development fits well with the broader one of ecological modernization (Giddens, 1998). On the other hand, it was established a relationship between ecological modernization and Environmental Education, highlighting that Environmental Education guided by ecological modernization takes into that solutions to environmental problems require first a thorough analysis of them.

Considering this, I conclude this paper with three guidelines that I think are essential for a successful environmental education program.

First: Environmental Education must develop a conception of ecology that establishes a link between the natural and the social world. In this perspective, it is important to establish some cognitive bases for configuring new ways of learning about the relationship between the social world and the natural world.

Second: Environmental education must emphasize the social implications of the ecological crisis. It will cause economic insecurity, and it will cause healthcare, food, water, and adequate housing to be in short supply. Estimates indicate that up to 132 million people may fall into poverty by 2030 due to the manifold effects of climate change. Although the worst economic and welfare effects lie further in the future, in some settings, poverty is already intertwined with vulnerability to climate-related threats such as flooding and vector-borne diseases (World Bank, 2020).

Third: Environmental education must develop an interdisciplinary approach to ecological problems. Any field of study lends support to the concept of an interdisciplinary approach, insofar as a scientific fact is always an abstraction from a larger complex. This approach is particularly valuable in dealing with environmental problems, where a phenomenon must be studied through different but complementary approaches. For example, the study of pollution involves not only biology, physics and chemistry, but also economics, sociology and politics. In all environmental studies, the contributions of numerous disciplines converge to reveal all the phenomena and problematic aspects. A monodisciplinary approach, on the other hand, tends to fragment such relationships.

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¹ Brundtland Report, also called *Our Common Future*, was released in 1987 by the World Commission on Environmental and Develoement (WCED). It was sponsored by the United Nations and chaired by Norwegian Prime Minister Gro Harlem Brundtland.

² It was the world's first intergovernmental conference on Environmental Education organized by the United Nations Education, Scientific, and Cultural Organization (UNESCO) in cooperation with the United Nations Environment Programme (UNEP). It was convened in Tbilisi, Georgia (USSR), from October 14-26, 1977.