

“The Environmental Institution in Chile, A Political Representation of the Ecological Crisis”

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In the present scenario of increasing sustainable global governance for ecological issues, the approval of Law 19.300 “Environmental Bases” 1994 in Chile is presented generally as the beginning of a modernization process of environmental institution, which culminates with the creation of the Environmental Ministry 2010 through Law 20.417. The paper will challenge the common understanding of this modernization process simply as institutional improvement and will raise the alternative thesis of a co-production in the representation of the ecological crisis and its solution between the politics and scientific systems.

With the historical emergence of the National Environmental Commission (1994) the research shows the emergence of a particular form of relation society-nature in Chile based on: i) the previous environmental institution existing in the country oriented to tackle pollution conflicts ii) the international influences by the official reports of United Nations Environmental Program and the Organization for the Economic Cooperation and Development with a center in the institutionalization of the environmental impact assessment and market instrument to regulate environmental problems and, iii) the global market integration of Chile as a supplier of raw material with a high pressure over land, water and energy in territories inhabited by indigenous population.

Together, these three influences are at the bottom of a representation of the ecological crisis only in terms of pollution management and rational use of natural resources which exclude the possibility to understand the human and social consequences provoked. In this scenario, the emergence of social movements against mega extractive and energetic projects show the need to review the manner in which the political system renders the environmental crisis. The notion of socio-ecological conflict is presented to understand how the search for sustainability could reinforce environmental problems especially for the mining activity, forestry industry and energy production, milestones of the ecological debate, nowadays.

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1.- Introduction: The society-nature relation as historical and sociological framework and its study in Latin America

“Nature is generally seen as precisely that which cannot be produced; it is the antithesis of human productive activity [...] But with the progress of capital accumulation and the expansion of economic development, this material substratum is more and more the product of social production, and the dominant axes of differentiation are increasingly societal in origins”.
(Smith, 1984:34)

The discourse of sustainable development is being assimilated by economic rationality and the policies of capitalization of nature, but the principles of sustainability is taking root at the local level through building new productive rationality, based on cultural values and meanings, the ecological potentialities of nature, and the social appropriation of science and technology⁴. (Leff, 2001: 28)

The working paper presented here starts from the assumption that every society establishes a particular form of relation with nature in the course of history. This form of society-nature relation operates as total realities⁵ in terms to define: institutions, practices, discourses and social as well as individual representation⁶. In other words, the representation of nature is socially created (Smith, 1984: 49-50) and limits what could be done in and with it, even further, will define what could be thought about environment in a particular place and moment.

From my perspective this conceptualization has its roots in a social realistic approach, where different disciplines of social science are concerned with explanation of the emergence of the so called “transcendental categories”⁷. In this line it is possible to integrate different perspectives, for example, in geography the work of Yi-Fu Tuan (1977) where the emergence of the notion of space and place in any of its forms emerges from the human experience in a combination of biological facts, cultural influences and knowledge. In this sense the very notion of space appears as universal and acquires in its power to structure the world only because it is embedded in human and social practices and here is the reason why, the idea of space varies between cultures. From a sociological perspective the work of Margaret Archer (1995) is a landmark in the realistic social theory with its morphogenetic approach, in this field, other conceptualization which also deals with the social structuration of space, for example, is the work of Andrew Sayer (2000). For the author, the idea of realism is connected with a constant revision of the concept used to study the mechanism created to make research. The socially embedded conditions of the knowledge as well as the social construction of the understanding categories are central pieces in a social reality that is not reducible to a mere intellectual or cultural activity.

In a very general way, this realistic perspective will inform a critical approach to nature conceptualized as social construction. The last sentence does not aim to advocate for an imaginary representation of the environment; nature and what happens with it, pressure over social reality without doubt, but only because the type of relation between society and nature is socially created in a dynamic process. “Every society creates its own environmental rationality” is the sentence with which Enrique Leff (1986) describes the integrative character of all the material as well as symbolic interaction between society and nature. It is only inside of this experience that environment as factual reality acquires significance for peoples. In the following I want to discuss the theoretical

⁴ Original Spanish texts: El discurso del desarrollo sustentable está siendo asimilado por la racionalidad económica y por las políticas de capitalización de la naturaleza, pero los principios de la sustentabilidad se están arraigando en el ámbito local a través de la construcción de nuevas racionalidades productivas, sustentadas en valores y significados culturales, en las potencialidades ecológicas de la naturaleza, y en la apropiación social de la ciencia y la tecnología. Translation by the author

⁵ Here I am using the concept of total reality in the sense in which Marcel Mauss defines “total social fact” (fait social fact) as “These phenomena are at once legal, economic, religious, aesthetic, morphological and so on...” (Mauss: 1996, 76)

⁶ Here the reference is to Durkheim and how the social and individual representation are connected, nevertheless “social representation... have an intensity which individual ones never achieve” (Durkheim in Gane 2002:77)

⁷ See Kant, transcendental categories. In “Crítica de la Razón Pura” (1998).

perspectives developed to understand the society-nature relation in Latin America with the intention to propose a general framework to approach the situation in Chile.

There are many efforts deployed by scholars in this regard, where a common element is to consider the time of the conquest and colony as a “principle of signification” (Augé 1998) from which it is possible to understand both i) the previous relation with nature of the native population in pre-Columbian time, and ii) the situation after the Spanish hegemony with the national independences. In these narratives, the deepness in which the pre-Columbian and the National State Consolidation periods are described could vary, but this historical continuum shows a coherent description under the idea of an increasing pressure over nature. The nature in this narrative is performed as a wild environment to dominate on it and immediately after, as source of richness. Inside the republican period the situation did not change and two moments appear as particularly relevant for the analysis, the period of national industrialization in the 60s - 70s and the neoliberal restructuring of the 80s - 90s.

Two central references in the construction of a broad picture of the situation in Latin America are the works of Bernard Raza (2000) and Nicolo Gligo (1980). The relevance of these efforts lies in linking sociological and historical approaches. Both authors have conceptualized the historical transformation in the post-Columbian period, in the case of Gligo there is an effort to understand the conquest and colonization in a bigger picture where the Aztec, Maya and Inca form of relation with nature highlight the differences with regard to the Colonial period in a first wave of global integration. After that, the author refers to the process of independence highlighting the consolidation of an extractive orientation in the regional economy. In the work of Raza there is no central reference to the pre-Columbian period, instead the analysis starts with the Conquest and Colony periods and from this point, he builds up a discourse where the different periods are articulated to show the consolidation of a regional strategy of integration in the international economy. A central concern in this research is to observe how the neoliberal restructuring in the last 30 years produces stable changes that are at the bottom of the social movements that contest the dominant market economy.

Raza, as it was said above, recognizes four historical periods in which the society-nature relation in Latin America is analyzed: accumulation in the Colonial period (1500-1820), extroverted accumulation (1830-1930), introverted accumulation (1930-1970), neoliberal restructuring (1970-nowadays). In each of these periods the author highlights how the process of capital accumulation defines a particular form of “ecological restriction”, that is, the socially created limits for the exploitation of nature as source of richness and provider of environmental services.

The ecological restriction in the colony based on the new position of humans in the universe allows the rapid extraction of raw material for supply to the European markets, changing the pattern of society-nature relations in the new world. In the extroverted accumulation period, the national political elites strengthen the role of Latin America as producer of raw materials thus, intensifying the large scale extraction. In this period begins the substitution of raw material for synthetics ones with disastrous consequences for the nationally specialized economies and for the large masses of workers in Latin America, relevant are the cases of rubber, guano and saltpeter.

In the introverted period begins the industrialization of Latin American countries under a regional strategy of “importation substitution”. This process represents a national impulse for the establishment of the big industries such as steel, cement, petroleum, energy in a first moment and other manufactured products in a second stage. In another dimension during this period begins also the industrialization of agriculture in the region, which implies the incorporation of high performance species, industrial machinery and fertilizer. During the industrialization period the

contamination episodes show a local scale and not the regional extension that could be seen in later decades.

At the end, during the neoliberal restructuration it is possible to identify two interacting forces, from the one side, the intensification of the extractive economic orientation of the Latin American countries because of losing support given by the State to the national industry. At the same time the capital accumulation experienced in the 80s and 90s presses over the new democratic governments after the dictator regimes to open new markets for investment in the form of: infrastructure, social services and the environment. For Raza, nowadays, the situation of Latin America becomes paradoxical because the requirement of global system tends to the depletion of the natural richness in the region and at the same time that Latin America ecosystems gains strategic relevance as provider of environmental services to the whole world.

Giglio starts his analysis over the “ecological history of Latin America” observing the environmental integration of the cultures in the pre-Columbian period. In his words, the form of the society-nature relations of these cultures was characterized by the ideas of “control and adaptation”. In this context, the exact knowledge about the environment shows an empiric comprehension of the ecology. The society-nature relation in this period is described as harmonic because it is understood as the effects of the human action over the ecosystems and actively compensates the productive or the extractive processes. This fact, does not exclude the artificial character of the environment construction in this period, but on the contrary will show the difference with the modern situation. The author distinguishes between two forms of society-nature relations in terms of how the pre-Columbian cultures developed agriculture in environments with excess water or hydraulics in terms of irrigation. The first are the cases of the Texcoco and Titicaca lakes at the time of the Spanish arrival. The second is the case of the Inca Empire. The most relevant element in the analysis is to rescue the high efficiency and technological character of these practices. It is possible to sustain that this kind of production produced more and fed more of the populace than modern techniques in the same area nowadays. Talking about the Inca agriculture production the author shows the techniques to prepare and protect the soil, the irrigation system, the use of natural fertilizer, the treatment of seed for planting and avoidance of infections, and the meteorological methods for growing and harvesting.

During the Conquest and the Colony, the way in which Latin America was occupied by the Spanish under the premises that the productive methods of the native population were inferior in comparison with the European techniques and secondly, that the natural resources were unlimited. This interpretation has its bases in the Renaissance ideology of the nature domination and in the catholic struggle against the infidels. The Latin America system of production was oriented towards mining activity and the supply of precious metals to the metropolis. The agriculture and the animal husbandry were only in the levels of self-consume with the exception of some especial products. The mining activity rearticulates the local environment in an unseen fashion, the mine achieved a bigger extension, the need for energy in the form of firewood and animal food depleted all the vegetation in the surrounding and the water was also exhausted on the tailing process. The closing of mines at this moment were not connected with the consumption of the mineral but with a dramatic transformation on the environment which did not allow these forms of exploitation.

In the next period, framed by Giglio between the national independences in Latin America in the early XIXth century to the crisis of 1930, the strategy of economic development did not change substantively within the last period. The new national bourgeoisie adopted an European perspective and condemned the pre-Columbian as well as the Colonial period. The production was again under the representation of unlimited resources and only changed the type of products that were no longer required by the Spanish Crown but for the English and then central Europe industrial

revolution. Products such as cacao, coffee, rubber, saltpeter were in high demand and an important source of revenues for the countries. The articulation of the mining activity and agriculture was low, and the transformation in the international market because of the development of synthetic products in Europe represented a big economic crisis for the countries. In the case of Chile the so called saltpeter crisis is a better example of this form of socio-nature relation and its decline.

It can be said that, the Latin America form of development determines a socio-nature relations based on the idea of unlimited resources and a predator style. This strategy finds ground in the ignorance regarding the advances in pre-Colombian techniques of production and in the fallacy of the development as depletion of resources. From this point, two hypothesis emerge i) the social representation of the ecological problem in Latin America has avoided consideration of the extractives industries at its central problem and, ii) the extractive industries since the Colonial period to date represent different waves of territorial restructuring in the region, which has completely transformed the social and natural context, alternating episodes of great crisis.

2.- The representation of the ecological crisis in Chile between 1980-2012

In this section, I will explore the representation of the environmental crisis as a sociological object of study (Bourdieu & Wäquant 1992). This perspective has been adopted principally by researchers who are concerned with the topic of “discourses on environment” (Hajer 1997, Hajer 2003, Hajer and Versteeg 2005, Oels 2005, Oels 2011) that is, the social narrative about the society-nature relation. In this line the main theoretical reference is the work on cultural discourses done by Michel Foucault (1979, 1989), which could be considered the theoretical framework where the new research on environmental narrative is embedded. From my perspective, I want to propose to understand the representation of the environmental crisis as an active social operation where political as well as scientific systems converge in the creation of a highly productive social field. Here, problems and possible solutions become part of a national strategy to foster certain forms of actions, mainly economic enterprises.

The environmental crisis emerges as an international reality in the early 70s (Mol, Spaargaren and Sonnenfeld 2009,) and in the last 40 years has been organized in what could be called an international concern about the big environmental narrative from degradation to the institutional reform and in the last years, to the international concern about global warming (Ibid 2009)⁸. I will propose to comprehend every notion of crisis, and not only regarding environmental issues, as a double sided phenomenon which articulates the description of the problem and the possible solution. It is exactly in this sense that the French school of cognitive analysis for public policy explores the way in which every “policy” is not only a possible solution for a social problem, besides it could be conceptualized as a normative and a cognitive apparatus which has the capability “to construct frameworks for the interpretation of the word”⁹ (Müller, 2000). In this section I will use the aforementioned conceptualization to frame the representation of the ecological crisis as a cognitive and a normative dispositive where the political and the scientific system come together to create social discourses and practices.

By joining two arguments, I will argue that the articulation of the political and scientific systems meet consensus in the possibility to represent the ecological crisis as a new space to obtain

⁸ Here the main reference is to Al Gore and his effort to call attention to the Global Warming issue in the documentary film “An Inconvenient Truth” 2006

⁹ See Pierre Müller (2000) “To the extent that it considers the purpose of public policies to be no longer just to solve problems but to construct frameworks for the interpretation of the word”

economic revenues (Hajer: 2009)¹⁰. In the growth-oriented capitalistic societies the conceptualization of the problem and possible solution for the ecological crisis should be translated into the economic language to make it effective (Hajer, 1995:31)¹¹. The terms entrepreneurialism, innovation or industrial consolidation, becomes part of narrative where profitable enterprises are created to face environmental problems. In this argumentation I use the notion of ecological modernization as the assimilation of the environmental degradation into the economic imperative of growth and at the same time, the ecological modernization as an operation where the narratives of the political and scientific systems converge to create a social space where the extractive enterprises are fostered.

Observing the case of Chile, it is possible to notice how the modernization of the environmental institution articulates problem and possible solutions as a highly creative space in different periods during the last thirty years. In the following, I will describe those three moments where the national government, the economic orientation and the representation of nature interact in a particular fashion: i) Contamination control specially under the emblem of urban air pollution in the 80s, ii) Political call for a gradual internalization of the so called side effects of the extractive industry in the 90s and, iii) Rational integration of sustainable principles and technologies to increase the productivity of the extractive industries in the 2000s. In summary, it is plausible, observing the case of Chile as one of the most dynamic economies in the region, to sustain that historically these three moments consolidate the extractive orientation of Latin America in mega regional clusters compatible with the current wave of global restructuration of production.

i) Contamination control especially under the emblem of urban air pollution in the 80s

During the second half of the 80s an environmental consciousness emerges and is consolidated among the Chilean population. The dramatic consequences of the dictatorship regime in the field of the human right, from 1973 until 1989, monopolize the social awareness and subtractive relevance to the ecological crisis. Nevertheless, in the academic sphere and civil society the critic to the military government becomes an integrative discourse in which converge not only the human rights violations, the democracy recovering, the social inequality but also the high degree of environmental pollution and destruction.

What I remember as the main event, almost foundational for the environmental issues in Chile, was the first national meeting in La Serena, I think, in 1984. That was a very interesting time because it was almost the first time that scientific communities of the country met, invited by CILPLAN - Center for Environmental Research and Planning-, and strongly supported by some scholars, among whom was Guillermo Geisse Catholic University, Igor Saavedra University of Chile and other young emerging people as Rafael Asenjo. Then, this first meeting for environmental scientist was a major milestone, one because emerged inside the dictator regime and emerged as a fundamental criticism to the way in which they were doing things. That is important because the scientific community continue making these meetings, later becomes one in Talca and other Concepción, on that in Concepción coincides with the election of the first democratic president. In the event a forum is made with the participation of Hernan Büchi Candidate and former President Patricio Aylwin. This is a political forum in the framework of the environmental meeting and is the first public expression of the claim for environmental institutions. and the fact that there are acquired commitments, will be the foundation of the National Environmental Commission and the environment law framework. And many participants become relevant in their environmental positions, e.g. Rafael Asenjo will be the first Director of CONAMA. (Academic University of Chile)

¹⁰ Here I following the argument of Hajer "What is more, it makes the "ecological deficiency" of industrial society into a driving force for a new round of industrial innovation [...] Remedying environmental damage is seen as a "positive sum game": environmental damage is not an impediment for growth, quite the contrary, it is the new impetus for growth" (pp.81)

¹¹ "Ecological Modernization uses the language of business and conceptualises environmental pollution as a matter of inefficiency while operating within the bounds of cost-effectiveness and bureaucratic efficiency".

In this period and because of the lack of a central institution -in the form of governmental administration and legislation- the Supreme Court was the mechanism in which the socio-ecological conflict was canalized. In this context is the National Constitution promulgated in 1981 by the dictator regime which consecrates the “right to live in a free pollution environment” and based on that, every citizen has the power to demand of the National State the protection of this constitutional right whenever it is violated by any social agent. This legal mechanism is called “protection right” (Bertelsen: 19998) and helps organized communities to exert pressure on “big” industry. Especially relevant are the cases of high pollution in the mining process in the Atacama Desert as well as in the forestry industry in the Southern Forest addressed by the Supreme Court (Olivares: 2010).

"Moreover, the development of an institutional environmental framework for Chile driven by the Law 19300/1994 meant, to some extent, the decay of the impetus with which the Supreme Court known and resolved issues related to the protection of the fundamental right of Article 19.8 of the Constitution (right to live in a pollution free environment). (With the Law 19300/1994) It was created an environmental model which implemented an administrative procedure for the assessment of activities that may affect the environment, incorporating a new technique: citizen participation, so that the community submit claims and relevant deemed to the project under the system of environment impact assessment (EIA). The main consequences were, first, the legitimacy of those activities undergoing the evaluation specified by the Law 19,300 [...] second, a decrease in protective work of the Supreme Court through knowing protection resources"
(Olivares, 2010: 10)

Emerging concurrently in this period is the public concern with the high level of atmospheric pollution in the capital city. Santiago is presented in the mass media as one of the most contaminated cities in the world. In the collective imaginary, Santiago did appear as the third settlement with the worst air quality in the world only after the big metropolises of Mexico City and Moscow. It is not possible to probe in which place of the pollution ranking index Santiago was at this moment, nevertheless, it makes sense for a sociological explanation to raise the hypothesis that the air pollution in the national capital becomes the emblem used by the political elites to represent the ecological crisis. The administrative and economic relevance of the capital, which hosts more than the thirty per cent of the population, reduces relevance to the problems experienced in the vast areas inhabited of the nation, where the social pressure over nature has been historically higher.

My argument proposes to understand the 80s as the historical moment in which the environmental consciousness is consolidated in Chile. In this process a tension appears between the environmental problems in the capital city and in the productive process deployed by the big national industry in rural areas. In both cases the concern of the political authorities and the scientists was exclusive regarding pollution and the measures oriented to define an acceptable level of contamination which will not endanger human life. In this context the governmental methods to manage the air pollution in the city of Santiago are the prominent environmental issues. No case of contamination in other areas of the country attracts so much attention of the media as the automobile/traffic and industries restriction in the capital. In the same line, it is remarkable that the National Environmental Commission (CONAMA) was created over a former office responsible for creating and implementing measures to address the air pollution in Santiago city¹².

The social representation promoted by the convergence between the political and scientific systems in the 80s was centred in the urban pollution problems omitting a real consideration over the situation in the big extractive industries. During the 90s these industries were called to incorporate the environmental care in their productive process but only “gradually”. But in both periods, the extractive industry has been rendered as a highly productive enterprise which is adopting progressively ecological consideration. In this representation there is low consideration of central environmental issues such as i) the consolidation of mono-productive territorial roles, ii) the big

¹² The Technical Secretary of the National Environmental Commission which belongs to the Minister of National Goods

regional scale achieved by the productive cluster, and iii) uncontrolled exploitation of productive supplies specially energy and water. To summarize, the representation of the environmental crisis in Chile in the 80s is highly effective to foster the extractive orientation of the Chilean economic as its way to participate in global markets.

ii) Political call for a gradual internalization of side effects of extractives industries in the 90s

With the restoration of democracy and in concordance with the international tendencies promoted by United Nation, the Chilean authorities start a process of transformation in the environmental institutions in the 90s. In general, this movement has been described as centralization and coordination of the environmental policy in a national agency. In the case of Latin America, the principles of this process are found in the document “Propuesta de Ley Básica de Protección Ambiental y Promoción del Desarrollo Sostenible” (UNEP: 1993) by the Latin American and Caribbean United Nation Environment Program (UNEP). This text is organized by environmental elements i.e. water, ground, natural resources, protected areas, etc; among other things the document did claim to consolidate the position of minister of the environment inside the National State apparatus and in a very progressive stand the concept of environmental crime. The degree of concordance with the reform promoted by UNEP varies between different countries in the region and in the case of Chile the national office did not have the range of ministry until 2010 and its president was only officially appointed minister in 2007.

The aforementioned process could be seen as the beginning of the Chilean trajectory in the “ecological modernization”, because it in many senses represents a pattern of rationalization inside the national environmental management. In addition, the trajectory deployed for Chile in the ecological modernization can be characterized by a gradual incorporation of the environmental consideration inside productive process in order to preserve a stable pattern of economic development as central consideration. This argument could be proven in different ways, in the following I will refer to two situations: i) the presidential speech pronounced by the former President Patricio Aylwin in 1992 in order to open the discussion on the first environmental legislation in the parliament and, ii) the growing pressure over the nature exerted by the extractive industries after the democracy restoration in the 90s.

In the presidential speech it is possible to highlight a group of discursive mechanisms that render the society-nature relation in the 90s in Chile, where two of them deserve special attention: i) the changing interpretation of the constitutional right to live in a pollution free environment, from a right into a social obligation, and ii) the reinforcement of the extractive orientation of the Chilean economy based on an overwhelming confidence in the technical capability to harmonize economic development and environmental care.

The challenge, that obliged us to save the planet from this degradation that is exposed by the human activity, requires the understanding that the environmental protection is not only a right of every man, but at the same time a "human obligation" that forces us to be aware and to emphasize the need of demanding more from us for the survival of the own human life. [...] The issue here is not to increase the catalogue of rights that the man can demand under the Constitution and to the rest of the inhabitants of the planet.
(Aylwin, 1992: 5)

In this extract, the presidential speech makes an open reference to avoid demanding compliance with the right to live in a pollution free environment in courts. During the second half of the 80s, the Chilean Supreme Court played a central role as catalyst in the ecological conflict when deciding in favour of citizen initiative to stop dramatic episodes of contamination produced by the national

copper company as well as the big forestry industries. In this context, the aforementioned presidential call should be rendered as a loss in the democratic character to manage the ecological conflict. In the same argumentative line, the role played by the National Environmental Corporation (CONAMA) in the 90s and because it's technical way to organize the society-nature relation in Chile, could be rendered as a central piece in the de-politicization of the socio-ecological conflict.

A sustainable development must preserve the soil, the water, the genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. But simultaneously, the conservation of the environment cannot appear in a restrictive sense. Our country needs to satisfy increasing needs of housing, health, education, electric power, etc. It implies to use the resources which it owns. [...] It seems that the underdeveloped countries face the dilemma of growing and simultaneously preserving the nature. However, this dilemma is kind of just appearance than a real fact because with the adequate mechanisms it is possible to promote the economic development and also to protect the environment.
(Aylwin, 1992: 6)

The intention of the political elites to stabilize a non-restrictive environmental care should be analyzed in its entire deepness for the case of Latin America. Here, two elements are central: i) the representation of progress made by the political system and ii) the environmental as well as social consequences associated with the big economic enterprises. With relation to the first element it is relevant to notice how the political system renders the idea of progress, for example, in the second democratic government of Chile, the former president Eduardo Frei starts the so called "Frei environmental doctrine" when participating in the inauguration of a mega hydroelectric plant in Alto Bío-Bío, the original settlement of one group of the Mapuche Population and without considering any of the many objections to the project did state: "Chile should never give up to the development of hydroelectric project because of strategic reasons [...] No one investment will be stopped for environmental considerations", "Nothing will stop the development of this country" (Frei, 1998). In a similar fashion, Cristina Fernández will advocate for a non-restrictive use of nature, claiming that the developing countries should not bear the environmental passive, "It is unfair that the developing countries that struggled with economic growth have just overcome poverty, are the ones who have to bear the environmental liability product of the countries that have polluted the world for decades."¹³

What is remarkable from these presidential speeches is the fact that they represent the position of the political system in Latin America. Eduardo Frei Ruiz Tagle (1994-2000) is the son of the former President of Chile Eduardo Frei Montalva (1964-1970) and Cristina Fernández the actual president of Argentina is the widow of the former President Néstor Kirchner (2003-2007). In other words, these two presidents –Frei and Fernández- belong to the most powerful political parties in their countries and at the same time, represent the continuation of particular ideologies inside the political elites of Latin America. Taking this into account, it is possible to raise the hypothesis that the political system forges a doctrine of material progress in opposition to environmental care. In this narrative the ecological concern appears only as pollution control excluding the territorial transformation provoked and in this way omitting the social and environmental consequences of the productive restructuration. This situation is not new for Latin America, as was said before the regional mono-production, the depletion of the productive in-put, the complete destruction of natural surfaces are produced by the economic enterprise since the Colonial period and strongly in contrast with the regional integration and environmental sensibility of the pre-Columbian population, where in many cases the agriculture system supports more population and produces more food than the modern methods of today.

This argument is not based on a nostalgic or utopian society-nature relation; I want to support the idea that the scale and the exhaustive manner in which the economic enterprises produce in Latin

¹³ Translation of the author.

America should be considered in all its consequences. As will be shown in the next section, are the productive cluster of mining and forestry activity, and their intent to duplicate its production in the next decade the centre of analysis. In this context, the socio-ecological conflict could not be reduced to the key pollution control or rational exploitation of resources. A new framework of analysis is needed to highlight the social, natural and territorial transformation produced by this large scale restructuration.

Copper Production in the World and the Chilean Participation

In Fig. 1, it can be observed, how the Chilean production of copper in 1997 achieves a 15% of the world production and in 2003 gets closer to 20%. In this process it is relevant to observe that in the first 6 years of democratic government in Chile, after the dictatorship period (1990-1997) the production of copper increases in more than 50% in comparison with the previous decade. In this situation the liberation to private investments of the exploration and exploitation of mineral deposits approved by the first democratic government was central. In this sense, it is possible to sustain that the mining economic boom of Chile in the last decade and their continuity in the future is based on private investment with a low level of taxation and royalty payment. As opposed to the tendency to the process of Chilean Copper Nationalization in the 70s¹⁴.

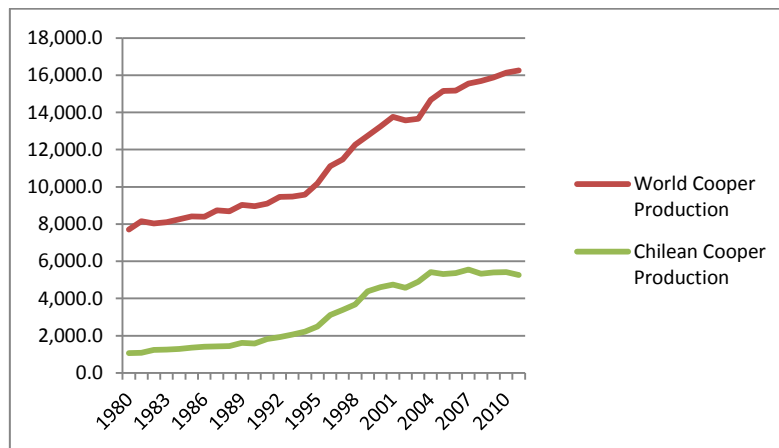


Figure 1
World Copper Production (red) Chilean Copper Production (green)
Source COCHILCO Chilean Copper Corporation

Forestry production in Chile

The participation of the forestry sector in the national GDP did not achieve the level of the mining sector. The trees' industry represents in the last decade a 3,5% from the total national GDP while the mining industry is always over the 20%. Nevertheless, from the year 1990 and in the last two decades the sector did expand its exportations over a 600% moving from 855 to 4.960 Million US Dollars in 2007 and 5.452 Million US Dollars in 2008 (FAO:2004). This expansion is based on a very high concentration of forest in only two private companies belonging to Chilean capitals with more than the 71% of surfaces, from the other 30% almost the total is divided in international companies (INFOR:2008). These companies together concentrate also around the 70% of the native forest in the country (Ibid INFOR). The forestry industry shows also a pattern of rapid growth after the democracy recovering, highly based on the promotion of private investment which controls the forest areas of

¹⁴ The Chilean Copper Nationalization is the process by which the copper mines controlled for foreigners capitals –especially from North America and England- become from the State.

the nation. The pressure over land resources has increased in the last 20 years obtaining for the industry former areas advocated to agriculture activities, indigenous reserves and native forest.

Energy and industrial production

Fig. 2 shows the Chile trajectory in terms of GDP and energetic use. This scheme is informative because it shows the characteristics of the production and the economic growth in terms of efficient use of energy. Another relevant indicator will be the use of land and water, but in both cases the statistics available, are insufficient make a proper comparison.

In analyzing the scheme it is possible to highlight three periods with different relations between economic growth and uses of energy: i) before 1980 the GDP is low but at the same time with a lower use of energy, ii) between 1980-1995 the GDP increases strongly but with an equal requirement of energy, iii) after the 1995 the GDP continue in a high rate of growth but this time with a bigger requirement of energy. In this last period one unit of GDP growth would require more than one extra unit of energy produced, in other words, Chile shows an inefficient use of energy. There is no tendency to the decoupling in the Chilean production, even more so, there is a negative relation between production and energy use.

If we connect the information given by the graphics of Copper production and GDP-Energy relation in Chile, it is possible to state that the increasing production of Copper between 1997 and 2011, which represents the first of revenues in the country, has been possible only by an overuse of energy and other productive inputs. This tendency to require increasing amounts of energy in order to ensure stable levels of production, calls for an integrative analysis of the Chilean extractive economic orientation.

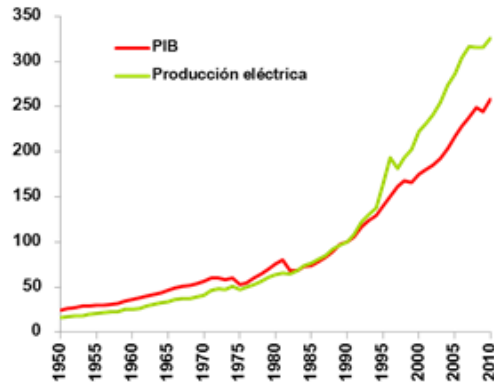


Figure 2
GDP (red) Electric Production (Green) Source Central Bank Chile

Land use and extractive industries

In the territorial dimension 162.000 square kilometres which represent more than the 21,4% of the total surface of the country (756.945 km²¹⁵) have some forms of forest. In the last decades the environmental groups have warned about the loss in native forest in terms of surface and strength as consequences of the pressure exerted by the incorporation of foreigners' trees. Plantation forest gains extension and in the regions of Maule, Bio-Bio, Araucanía and Los Lagos south-central part of Chile, represent between the 20-40% of the total regional surface. The expansion of the industry continues in the southern regions endangering the reserves of native forest.

¹⁵ This proportion makes reference to what is commonly understood as the Chilean continental territory, that is, the territory in South America and excluding the land in the Antarctic and the island in the Oceania.

In Chile the deforestation process continues with the native forest, people tend to add native forest and plantation forest, that it is absurd, it has nothing to do, it makes no sense to say "we have so much native forest and so much plantation forest ", this balance is the same thing to create a balance between apples and berries, exactly the same. The roles played by the native forest ecosystems are much more complex, more diverse which meets the one in plantation. The plantation is agriculture, as well could add peaches trees to native forest, the cherry tree, the pear tree, the apple tree, because they are trees, where the only difference is the production of fruit, trees plantation produces timber. Wherever you look there are problems very, very serious. [...] Everyone says was made a native forest round table three or four years ago and came to a good conclusion. The good conclusion was "let it out the conflict and let us keeping with what we agree." They left out the replacement of native forests, this should not occur for any reason. There is enough land for forestation in Chile, over 2.000.000 hectares without to touch the native forest and to retrieve soil in deforested sites. (Academic University of Chile)

In the case of the mining industry the situation is no different, in the regions of Atacama Desert, between the regions of Tarapacá, Antofagasta, Atacama and Coquimbo around 70% of the total territorial surface have been assigned for the exploration and exploitation of mineral deposit. The mining activity has overcome their previous northern and southern limits and it has become difficult to predict the consequences over the water deposits and the patterns of urbanization in the area.

We have for the first time in Chile, and as a result of the mining process, a city for rich and middle class which is called Iquique and a city for the poor called Alto Hospicio. That urban structure of two different cities is a product of accelerated economic investment, massive job creation in cities and of course, the expulsion of rural communities, because once communities are left without water, what they could do done in the countryside, then everyone migrates to the cities. Then you can see that the 99% of the population in these regions live in the city and the countryside is totally uninhabited. How all these issues are joined and how they result in new problems, new threats, new challenges. There is no office in Chile, nor any ministry worried about these changes and I think that's unusual for good or ill. (Academic University of Chile)



Figure 3: Map of Chile

iii) Rational integration of sustainable principles and technologies to increase the productivity of the extractive industries in the 2000s.

The integration of Chile in the international economy as a supplier of raw materials has increased the pressure over the production inputs in the different industries. In the case of the mining activity its expansion is based on a growing demand for energy and water. This industrial cluster has expanded its territorial location in the Atacama Desert from the so called Big North to the South acquiring the seventy per cent of the area located between first and fourth regions for exploration and exploitation of mineral deposit. The increasing levels of production are based on the depletion of fossil deposits of water, highly valuable for the population in the most arid desert of the world and in a high use of energy which leads to dramatic changes in the national energetic matrix¹⁶. The

¹⁶ The energetic matrix in Chile is based in thermoelectric plants in the Interconnected System Big North (SING) and Hydroelectric plants in the Interconnected Central System (SIC). In the SIC, the form of production is based in megaprojects located in remotes areas which the problem associated to energy transport and environmental destruction in the places flooded. In the case of SING the thermoelectric plants

case of the forestry activity is not any different; the industry owns more than forty per cent of the regions in south-central Chile. The expansion of the alien trees in plantation endangers the native forest in terms of extension and strength. The forestry industry is expanded beyond the tenth Chilean region, where their pressure over the land has tended to expel native population and by different situation as e.g. water demand, has replaced the agriculture which was the typical activity in the area and thus, results in the depopulation of rural towns.

This process of industrial expansion in terms of regional mono-productive clusters, I will propose should be understood as a result of the first wave of ecological modernization outside of the developed or central economies. In the periphery regions, and particularly in the case of Latin America as supplier of raw materials, the environmental institutional modernization will foster this exploitation-exportation role. Under the imperative of economic growth the democratic government -after the military dictatorships- reinforces the already existing extractive enterprises and connects them with a national rhetoric of success.

The biggest open mine in the world¹⁷ and the first international producer of copper has been part of the national pride of Chile. This narrative has been coupled with the idea of economic development by different regimes with total independence of their political orientation, and in this way, a critical reflection regarding the socio-ecological consequences of the changing scale of the industry remain absent. The national productive restructuration -in the form of regional clusters- could be seen as being responsible for the dramatic changes in the territorial organization. In the case of Chile, the pressure over land and water is responsible for i) losing agricultural activity in the rural areas where the productive industries are located, ii) the depopulation of small cities and towns in the inner land, iii) a rapid pattern of urban growth in middle cities based on informal settlements, and iv) unstable national and international migrations flows.

Nevertheless the emergence of regional industrial cluster could not be possible without the integration of "sustainable mechanism" in the extractive activities. It is not possible to argue that for the Chilean case the mining as well as the forestry companies in the last twenty five years are producing in a more polluted manner, neither that they exploit resources irrationally. The future development of both industries, which intent more than double the production in the next decade, it is only possible by the incorporation of so called green technologies. The pressure of the international markets to certify a friendly production -socially and environmentally- is driven in this direction, in the same way, that the international agencies promote the incorporation of market mechanisms to regulate contamination and ensure the rational use of resources.

"The mining industry is a large consumer of energy and in the next years their generation of new NCRE will not meet the demand that will require new projects to be developed between now and 2020" [...] "therefore and for now the industry will continue to rely on an energy matrix in the SING based primarily on the use of coal. This, notwithstanding the efforts of several mining companies to use NCRE supply in specific sectors of their operations," (El Mercurio Ediciones Especiales on-line 25.01.2012)

Nevertheless, the future growth of the mining industry is not possible only by means of green technologies incorporation, how it shows the previous quote, for the energy supply the non-conventional and renewable energies would not be the main sources. In the opinion of scholars, the incorporation of renewable energies is only to strengthen the thermoelectric plants in the Desert region of Chile, which will be responsible to supply energy for the desalinization water process required for the mining industry in a scenario of freshwater exhaustion.

manly producing with coal, are located where the land prices is low, namely the poor municipalities in the surrounding of the mining industries. Both territorial pattern of energetic production distribute in an uneven manner benefit and damage and this situation is fostered by the mining pressure for energy.

¹⁷ Chuquicamata is the world biggest open mine and belong to CODELCO.

[...] The solar projects that are to be installed on the Salar de Pintao, surrounding the Pica Oasis, are 5000 hectares [...] Such issues are not solved, again, each of these projects is evaluated for its individual effect, but not for their synergy effects in an agglomerative fashion [...] these 5000 acres of solar panels are designed to generate energy for the operation of thermoelectric plants, whose main objective is to desalinate seawater to supply the mining activity and the cities resulting from large mining investments [...] all plants or mining facilities are all planning to desalinate seawater in cases of the water resources depletion, but for that is need large amounts of energy, which we do not have in the north. It is not indifferent to install these panels, with the strengthening of the series of thermoelectric plants on the coast and in the same process; the millions of sea water cubic meters which will be desalinated to supply this activity. (Academic University of Chile)

Different organizations –Private and State- project the growing of the mining activity to 2020, where the eleven years between 2009-2020, the investment will be bigger than in the 32 years between 1977-2008, increasing from 38.665 to 42.448 million of US dollars. The copper production will grow to 36,8% between 2011 and 2020 with a private inversion which represents a 53,5% of the total and the participation of the Chilean National Company of Copper provides a 45%¹⁸. The forestry sector according to official data from the Food and Agriculture Organization of the UN (FAO) represents during the first decade of the 2000s a 3,7% of the GPD but under estimation of the Chilean Forestry Institute (INFOR) it becomes possible to raise the participation of this industry to the 10 and even the 25% of the GDP in the next decades. Regarding the exportation, they fluctuate between 2 billion of US dollars in the 90s, 5000 million US dollars in the 2000s to achieve a historical record of 6000 million 2008. In other studies the FAO is using a methodology based on a positive context foresees a rate of growing of 7,9% where the industry will achieve a production for 12.736 Million of US Dollars (FAO: 2004).

Altogether, it is possible to sustain that if in the nineties the political system ensures the consolidation and maintenance of extractive industries as central engines of the national development; in the first decade of 21st century the role of the national environmental institution is to create the conditions for its expansion at the level of regional clusters. In the 90s the central mechanism to foster the industry was to define the levels of pollution and resources' exploitation possible to being resisted by the ecosystems. It is highly arguable that this social goal was not accomplished in a holistic manner and their degree of achievement is connected with the restrictive definition of environmental impact promoted, which is always connected with single industries and never referring to an aggregated level. In the first decade of 21st century central mechanism to promote the industrial expansion is the incorporation of market mechanism to regulate the environmental problems. The low degree of success in terms of audit and control over the productive industries will be solved through compliance incentives based on market logic. The level of pollution as well as the extraction quotas will be naturally achieved by consolidating markets to deal with such issues, in the same way that is proposed for the Co2 emission in the international arena. From this perspective, the role of the national environmental institution is to foster investments which have a responsible attitude toward the ecosystem, but again, due to the restrictive way to measure the impacts, a real degree of socio-ecological awareness and care is highly improbable.

The way in which the relation society-nature in Chile is rendered by the political system has been influenced by the international and multinational agencies. In the 90s the Latin American and Caribbean UNEP report, in congruence with the results of the Rio Summit (1992) seek to harmonize environmental protection and sustainable development offering a set of institutional and legal measures to be implemented in the regions. During the first decade of 21st the intention of Chile to access the OECD (2010) (Organization for Economic Co-operation and Development Staff) made it indispensable to evaluate the environmental performance of the country and a first report was published on 2005 (ECLAC: OECD 2005). In this text some central recommendations strengthen the

¹⁸ Minería de Chile. <http://mineriachile.com/2012/01/proyeccion-de-inversiones/>

market mechanism to organize environmental problems and in the opinion of many actors, the consolidation of the Environmental Minister is due to the OECD call to improve the institutional coordination.

These two political orientations to organize the society-nature relation in the 90s and in the 2000s were fostered not only by the political system in the national level, in the Chilean case, the requirement made by the international and multinational agencies are highly relevant. In the following, I will show how in the case of the UNEP (United Nation Environmental Program) and the OECD this orientation is presented by joining the political and the scientific system in a particular representation of the ecological crisis.

3. The co-production of a representation of the socio-ecological crisis from the political system

In Chile the political and scientific systems have cooperated to stabilize a social representation of the ecological crisis and its solution in terms of pollution control as the central emblem. This representation allows the construction and emergence of a social field highly creative and dynamic in terms of enterprises' generation. The definition, observation, monitoring, control, prevention and mitigation of contamination, are all social processes which require the articulation of the scientific knowledge and political decision-making, in order to become efficient in the social realm. This articulation becomes clear in the whole of the Chilean environmental modernization process that is possible to analyze between 1980 and 2010, highlighting three different periods: the 80s as the emergence of an environmental consciousness concerned about the pollution, the 90s with a political call to internalize in a gradual manner the contamination of the productive process and, the 2000s with a national stimulus to the extractive industry.

In these three periods important social transformations take place in the country, promoted by the new environmental social agreement contained in the environmental Law and National Institution. The new procedures require the emergence of original and innovative organizations in the public and private sector. In this regard, a group of consulting offices appears at the beginning of the 90s to offer the services of environmental evaluation for the private sector and at the same time for the government institutions. They have specialized services, evaluating different economic sectors as are the mining industry, the forestry activity, aquiculture project or pollution control. Until now there are no sociological studies about the behavior of this consultation and their capability to mobilize their own social capital to obtain the approval of the project under revision.

Together the political as well as the scientific systems have constructed the social comprehension about pollution. In this sense, the parliamentarian discussion about the Law 19.300/1994 confronts the need to define a "pollution free environment", in the 1992 the definition starts stating "where no contaminants are found or where they are presented in concentration or in periods lower than those in which they may affect the health of people or alter the composition, properties or the natural behavior of the environmental components"¹⁹. The final version of the Law in 1994 omits the reference to places where no contaminates are found expanding the possibility of human intervention in different ecosystem.

When the scientific system is mentioned, it is relevant to note the reference to the natural sciences as well as to the economic sciences. Perhaps for the reader there is no necessary connection between these two fields or disciplines, nevertheless, in the case of the environmental policy their articulation relies at the very bottom of the ecological modernization. In the Chilean case this situation is very clear, the new Law 20.417/2010 calls for the creation of the Environmental Court,

¹⁹ History of the Law 19.300/1994

where every citizen, organization or company can appeal to any resolution of the Environmental Superintendence. The courts are formed by two layers and one “expert”, who could be from the environmental or economic sciences. This form to define experts in the environmental field, gives excessive importance to the economic science to understand and represent the ecological crisis. Not surprisingly, therefore, the rapid access of the economic rationality and principles to frame the ecological debate: “who contaminates pay”, “who consumes pay”, “principal and agent dilemma” and the extended intention to create markets to regulate pollution and extraction, to mention a few cases.

In this scenario it becomes highly relevant to create a complementary representation to the ecological crisis and its solution from the social sciences, the humanities, geography and history. Here it will be central to articulate the social, human and environmental consequences of different waves of economic restructuration in the region. Economic restructuration should be conceptualized as regional transformation where the different ecologic components are reorganized: population, activities, production, resources and nature advocating for an environmental policy sensible to the emergent realities which exert pressure on social exclusion and ecosystem degradation.

A central issue in the construction of a social representation of the ecological crisis and solution is the redefinition of time and space in order to make prevalent the regenerative capability of nature to organize pollution control and resource extraction. Natural and economic sciences converge in the creation of this highly speculative space since the capabilities of ecosystem to resist human intervention are always under debate. The notions to avoid human risk and to keep ecosystem stables are necessarily connected with a definition of space and time where the environmental changes are measured. The political and scientific systems have articulated this representation in the last 30 years, many times, without due consideration to the human consequences at the local level and the aggregated effects in the regional scale.

The scientific and political answer has reoriented the production to sustainable forms of enterprise and to frame ecological modernization as a national effort in terms of clean production and rational use of resources. This conceptualization eludes the necessary discussion about the socio-ecological conflict, which reappears in social movements opposing mega productive enterprises, in the mining, forestry and energy production. The social movement against this type of enterprises shows how advances in sustainable production are linked with a high pressure over other scarce resources highly valuable for the local community. Water and land are disputed between big megaprojects and the native population in remote areas of Chile. The territorial pattern of expansion of the big industries shows this evidence and the ecological consciousness for the first time is linked with the whole national population in order to preserve invaluable ecosystems and against completely freedom from economic investment.

4.- Conclusion

The political and scientific systems have converged in order to make prevalent the environmental crisis and its solution in terms of pollution management and rational exploitation of natural resources in Chile in the last 30 years. This process is not only a question to make the aforementioned categories predominant in the public sphere but also to actively exclude other possibilities to render the socio-ecological conflict.

I proposed to understand the ecological modernization in Chile from the perspective of the articulation between the political and scientific system in order to stabilize a particular society-nature relation where three tendencies converge and interact: i) to represent the environmental

problem as a question of pollution, especially in the urban areas, where the higher percentage of the population are concentrated, ii) to foster the extractive industries in the vast inhabited areas of the country as the central orientation of the Chilean economy and at the same time, as the form of international integration and, iii) to exclude from the technical deliberation the human and environmental consequences of the extended scale which achieved the extractive industries in the form of big regional productive cluster, what will be increased exponentially in the next decade.

In order to analyze the Chilean form of modernization in the environmental institution, three periods were distinguished: i) Contamination control especially under the emblem of urban air pollution in the 80s, ii) Political call for a gradual internalization of side effects of extractives industries in the 90s and, iii) Rational integration of sustainable principles and technologies to increase the productivity of the extractive industries in the 2000s.

During the 80s it is possible to state that an ecological consciousness appears in the public place concerned especially about the dramatic episodes of contamination in the capital city. This situation attracts the attention of every media and to date is a subject of on-going debate. In another dimension but also concentrated in cases of pollution there were judicial cases solved by the Chilean Supreme Court in accordance with the "right of protection". In these cases the court decides in favour of the community and the civil society against the National Copper Company for the atmospheric contamination in the Atacama Desert and against the Forestry Industry by the contamination of watercourses in the South. The role played by the Supreme Court in the 80s in the regulation of the environmental problem was decayed with the new environmental institution CONAMA in the 90s and reappeared only at the end of the first decade of 2000s.

In 1994 with the approval of the Law 19.300 the first environmental Law and Institution were implemented in the Country. The new regulatory framework for the socio-nature relation in Chile was characterized by an overwhelming confidence from the political system and the society itself, in the technical capability to harmonize economic growth and environmental care. In this sense, the activities or enterprises subjected to the new instruments of environmental impact assessment (EIA) were legitimized in the public opinion. In this period the political system shows tendencies, from the one side, to foster a new environmental framework, what could be seen as a more strict interaction between economic enterprises and nature, and on the other side, to call to maintain or even better to increase the investment trends proposing a "gradual" application of the environmental normative. This discourse was well appreciated by the employers and it is possible to see how in the mining and in the forestry industry there is an important tendency to growth after the democracy recovering in Chile. The effects of the big extractive industries were slowly internalized in the next decades but possibly with success, nevertheless, the agglomerated effects of the spectacular growth in the extractive industry re-emerges at the end of first decade of the 21st century.

In the 2000s the big industrial boom in Chile will be anchored in the narrative of sustainability where the notion of "green production" played a central role. In this period the capability to attract private investment in Chile showed a big stability and there is no country in the region which could compete in terms of predictability and profitability. The mining activity as well as the forest industry, both together attract the major private investment during the last decade and their growth expectation consider, in an optimistic scenario, to double the production. The political system has been central in promoting this enterprise expansion and presumably the lack of proper regional planning and a correct degree of royalty are at the bottom of this problem. In the last years social movement claims against every megaproject in Chile, emblematic causes are the manifestation against the mine Pascualama in the Andes region between Chile and Argentina, Castilla a thermoelectric plant in the north of Chile, Hydroaysén a hydroelectric plant in Patagonia and Isla Riesco a coal mining in Fire Land. The regional scale achieved by the productive clusters and the territorial pattern of localization

affecting vulnerable population are the driving force in the socio-ecological conflict in Chile and Latin America.

I want to propose as hypothesis that the emergence of socio-ecological conflicts is directly connected with the scale in which the extractive industries operate in Chile. A central issue is the territorial limits in which projects are evaluated in their environmental impacts. During the 90s and 2000s megaprojects were not only disconnected to the aggregated effects produced in the regional cluster to which they belong, but even more dramatically megaprojects were divided in different parts in order to avoid considering the total effect produced when they start to operate. Separate the energy plants from the transmission lines to move the energy from remotes zone to centre of consumption was usual. In the same way to detach mineral extraction from tailing and melting process signifies consideration of a single activity as small project totally isolated to each other. This practices are starting to be reverted but not because of a transformation of the environmental impact assessment as a tool, but because of the re-judicialization of the environmental conflict. Environmental NGOs as well as the local community challenge the decision of the national environmental institution to allow certain enterprises by bringing the decision back to the Supreme Court. In this case and in contrast with the situation in the 80s, the claim of the community is not only a violation to live in a free-pollution environment but to illegalities in the process of environmental evaluation.

The socio-ecological conflict emerges and becomes a sociological key to understand the need to review the manner in which the political system renders the environmental crisis. The improvements in sustainability are connected to the intention to expand the economic activity to regions where the capability of the social and natural environment shows the incapacity to sustain the new roles assigned. In this sense, the environment and economy of Latin America since the Conquest period shows different waves to productive restructuration. These restructuration waves took place principally in rural areas completely transforming the regional productive orientation: i) expulsion of agriculture, ii) exaggerated mining activity, iii) consolidation of mono-productive areas, overall impact on the social and natural environment. In the social dimension the disintegration of the local community agriculture and the practically compulsive incorporation of this communities as working force are the central process in an economic restructuration with a bitter end. Closing mines because of the high level of pressure which deplete associated productive in-puts, namely water and energy, or the losing value of the mineral in the international market, lead to massive unemployment and the depopulation of those regions. In the natural dimension the mono-productive consolidation did change the ecosystem completely and irreversibly. The intensification of mono-cultivars, the introduction of foreign cattle, the creation of forest in plantation, are all transformations which aggregated effects at the regional level form the colonial period.

It is possible to state that the Chilean ecological modernization brings together the political and scientific system to create a representation to the ecological crisis and its solution in terms of pollution control and rational use of resources. This interpretation excludes the concern about the social and ecological consequences of the productive regional restructuration in the Country from the last decade of the dictator regime and principally from the democracy recovery. The two main extractives increase extraordinarily; their level of production in the last two decades and a bigger boom is expected to 2020. From an historical perspective it is possible to highlight different waves of regional production restructuration from the time of the colony and conquest in what could be called primary forms of globalization. From this perspective the re-emergence of socio-ecological conflicts should call the attention of the social sciences in terms to critically analyze the human, social and environmental consequences of the economic orientation in Latin America.

In this context the case of Chile is relevant because it is the first economy which adopts a neo-liberal

model and could inform similar processes running in other countries like Argentina, Peru and Colombia, to mention a few. From the academic point of view, the socio-ecological conflict becomes a relevant field for promoting deep change in the society-nature relation at the National State level, and for reorganizing the notion of development beyond the commodification of nature. In this process, a first step should be to legitimize the claims of the civil society and the social movements as relevant actors in the discussion about the role which every regions will play.

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