



Ambiente & Sociedade

ISSN: 1414-753X

revista@nepam.unicamp.br

Associação Nacional de Pós-Graduação e
Pesquisa em Ambiente e Sociedade
Brasil

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MARGARETE
APROXIMACIÓN DE LAS TEORÍAS DEL RIESGO EN UN ESTUDIO DE CASO EN EL SUR DE
BRASIL

Ambiente & Sociedade, vol. XVII, núm. 1, enero-marzo, 2014, pp. 133-150
Associação Nacional de Pós-Graduação e Pesquisa em Ambiente e Sociedade
Campinas, Brasil

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CONSIDERING RISK THEORIES IN RELATION TO A CASE STUDY IN THE SOUTH OF BRAZIL

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Introduction

During the last few decades some academic disciplines have sought to understand the changes brought about by the industrial society, its principles and values. From the 1960s onward and with greater intensity from the 1970s and 1980s, different types of environmental movements have emerged as a form of resistance against industrial contamination and disasters caused by human irresponsibility and, above all, by the incapacity and/or lack of interest on the part of governments to seek a solution to these problems.

It is within this context that discussions on environmental sociology emerge, such as debates between realists and constructivists. Although this article does not purport to be solely based on theory, it uses social representations to examine the environmental problems brought about by the leather industry in the region of Vale do Rio dos Sinos (VS), in the south of Brazil. That is, this study seeks to engage with the theories of environmental risk by looking at the framework of meanings employed by groups and social actors.

In the state of Rio Grande do Sul in the South of Brazil, cattle farming evolved very quickly due to the fertility of its extensive pastures. The history of leather has long been associated to artisanal craftsmanship which was quickly transformed into an industrial activity. The hard work of the European immigrant settlers, mainly of German origin, turned the Vale do Rio dos Sinos into both a national and international reference in the industry of leather, footwear and other components. Records show that the tanning industry emerged in 1829, when the valley became known as the first tanning and footwear centre in Brazil. Currently, the state of Rio Grande do Sul has the largest number of tanning houses in the country, a total of 217, 60% of which are based in the Vale do Rio dos Sinos (VS). The total number of employees is also significant, 15,821 people are employed by the industry in VS, that is, 35% of all workers in this industry in Brazil¹.

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It could be argued that the perceptions of the VS community regarding the environmental risks of the tanning industries are closely related to the historical process mentioned above. For this reason the question of risks and how they are perceived cannot be analyzed separately from the (direct or indirect) daily practices of the industrial process. Therefore, with regard to public and company policies, the question to be addressed is: what projects have been developed and what are their results in terms of management? The question related to social analysis would be: to what extent does the community participate in either policies or in protest movements?

The aim of this article is to move away from abstraction and use a concrete case to make a critique of particular theories of environmental risk in order to show some of their limitations. To this end, we ask the following question: to what extent do the different risk theories contribute to our understanding of the problems experienced in developing countries? We seek to answer this question by analyzing the perception-action of environmental risks in the tanning industry in the Sinos Valley.

Methodological procedure

The scope for researching environmental risks and the tanning industry in VS is broad and this analysis focuses on the discourse of actors which make up the reality of the valley. The significance and meanings of socio-cultural and political conflicts in relation to environmental issues in the VS region are understood from the analysis of discursive practices: 307 questionnaires and 32 open interviews were conducted, employing a qualitative-quantitative approach. Respondents were identified with socio-cultural, economic and political agents and were divided into workers, public administration officials, NGO members, residents and entrepreneurs. Emphasis was placed on the individual experiences of these actors, their feelings and perceptions of the development of the tanning industry and its risks.

More specifically, this article is based on a perspectiveⁱⁱ which focuses on associating the main theoretical framework to the real risks of a particular industrial sector (tanning) which emerged and evolved in Brazil.

On the whole, as this research has a broad scope, we will not identify respondents within a survey, but only use fragments of interviews when statements are significant to our understanding of theories of risk. That is, citations and graphs are used to corroborate with the general discussion relating to the limitations of risk theories within a local analysis, particularly with regard to the relationship between developed and developing countries. Furthermore, so as to be as precise as possible with information, we will point out the "citation extracts" of the majority.

The survey is relevant because it enables a comparative analysis with data from the open interviews. The purpose here is not to conduct a quantitative or statistical analysis, but make use of yet another technique to prove or refute the data acquired qualitatively. In this case, applying the (closed) survey was sufficient to extract the opinions and attitudes of respondents in a clear way. This technique was important in revealing initial suppositions, providing comparison indexes and a means of analyzing it in conjunction with other dataⁱⁱⁱ.

At the bibliographical-theoretical level and, indeed, at the level of this case study, it can be observed that the contamination produced by this industrial sector (tanning industries), within a sociological perspective, is linked to the social and historical formation of the VS community. Moving beyond this characterization, Edgar Morin (1974) emphasized that academics need to urgently think about integrating man, nature and society so that concepts such as “biological, cultural, man and nature” are not dissociated. In this case, interdisciplinarity is fundamental to understand the risks of the tanning industry.

Human beings are as much a part of nature as nature is part of society. But society is increasingly interfering in nature and changing biological and physical processes. Thus, it is not possible to analyze technical-industrial and environmental risks without understanding and incorporating the physical and biological sciences.

Finally, despite the fact that the object of this analysis lies closer to the social sciences - more specifically to anthropology and the ethnographic analysis of the VS region's reality and the behaviour of its population with regard to the damage caused by this industrial segment, which also includes socio-cultural, economic and political aspects - the latent complexity of this topic (the technological and industrial risks of the tanning industries) requires the integration of all the sciences. For example, in order to measure soil and water contamination resulting from solid and liquid waste, an empirical knowledge of chemistry is required (RODRIGUES, 2008); to assess the territorial surface range of this contamination, knowledge of physics is required; environmental biology enables us to analyze the damage caused to the flora and fauna (SCHMITT, 2010); illnesses and diseases caused by chemical products can be assessed through the health sciences, both at the internal-direct (workers) and external-indirect (communities close to these industries) levels.

The Macro and the micro: contributions of the case study to risk theories

In his critique of risk theories, Laraña (2001) argues that the problem with regard to the analysis of case studies is that some theories, such as those of reflexive modernization or ecological modernization, tend to simplify the nature of social reflexivity processes, attributing the causes of risk awareness to the seriousness of the cases. Beck argues that changes in consciousness take citizens into a new type of modernization: *reflexive* modernization. In this context, environmental consciousness is the consequence of cultural changes followed by the transformation rationale of industrial society.

In an attempt to examine risk theories more closely by means of a case study, a constructivist conceptual base was fundamental in understanding that the social-cultural construction of a society influences the behaviour and daily practices of people. Risks are only socially processed if they are cognitively constructed by social agents. That is, many environmental problems are invisible and in order to become part of public opinion they need to be reproduced by groups such as scientists, environmentalists and the media.

Mello (1997, p. 47) argues that “constructivism is the relational-cognitive model used to analyse the collective process of constructing common meanings in order to make

sense of the relationships between individuals". Following this assumption, Guivant, during the World Congress of the "International Sociological Association" argued that:

The constructivist perspective in environmental sociology seeks to understand how people attribute meanings to their worlds. For factors to be socially considered environmental problems, more than a mere impartial and neutral interpretation of a real phenomenon is required; it is also not enough to simply refer to objective facts about nature, rather this process also involves socially constructed demands. The work of environmental sociology is to analyze how environmental problems are construed, presented and questioned. In principle, someone will need to persuade other social actors about the urgency of different problems (Guivant, 2002, p.2).

This construction takes place through the analysis of social processes and the dynamics between agents (and sometimes institutions) who conduct the core analysis of meaning frameworks associated to what we call socio-cultural construction.

Thus, risk and the perception of risk cannot be analyzed separately from daily practices. A "micro" approach to these issues is essential in order to understand how different actors express themselves. As Cicourel (1981) argues this is when sociologists study the inter-relations between the *macro* and *micro* levels of reality. The behaviour of a society and its practices must be analyzed at the level of globalized information as this is crucial in understanding the impact of the global on the local and vice-versa. According to this author, the micro and the macro are right for integrating the 'everyday' sphere. Micro-processes are associated to social structures at the local level and are the product of discourse (the fragment of discourse). Nonetheless, these segments are also indirectly related to macro-processes.

This approach is linked to Goffman (2006) whose *metaphorical frames* can be used to present our experiences based on a process involving the perception, interpretation, comprehension and the action of reality. This frame can be used as a tool for observing and understanding what is taking place. He argues that the purpose of frames is to perceive, interpret and understand situations and actions, as well as the people involved in this scenario.

The need for a more detailed focus emerges from observations which include the local tendencies affected by global transformations. The aim here is not to move away from "macro" conceptions, but to use the "micro" level to get closer to the object studied. That is, this is the ideal moment to *conduct a field study* (CICOUREL, 1982). In this article we examine the *local* in relation to the *global* by analyzing the perceptions of risks (economic, socio-cultural and political agents) in a case study of the leather tanning industries in the *Sinos Valley*.

More specifically, it is argued within contemporary sociology or political science that among other issues raised by a globalized world are the new ways of doing politics which are independent from conventional forms. According to Beck (1997), official, regulated politics is transformed into "non-politics" and non-political phenomena are transformed into politics in the globalized society: a politics of subsistence, an autonomous politics which changes the rules. One of the elements highlighted in relation to this politics is the need for synergy between economic, social and environmental objectives.

We do not refute this need or the fact that this new form of political organization may already be a reality in some countries of the world. However, we believe that Brazil has the opportunity to participate in politics and mobilize itself against the economic exploitation of the globalized market. But how can this happen or how do we envisage this when faced with a culture such as that of the *Sinos Valley*, which expects changes to emerge from the hand of government? The democratic participation of most of the Brazilian population is limited to voting at elections and, as it is clear from this study, most people blame the government for the catastrophic effects taking place at the *local* level. They are unable to see that causes also relate to the *global* level (FIGUEIREDO; SPILKI; SANTOS, 2010).

In his conception of risk society, Beck (1997) describes the transformation of an era which is at its most damaging point and can no longer be scientifically controlled. He points to three factors in relation to this evolution: 1- natural and cultural (industrial society) resources are being depleted by modernization; 2- threats produced by this society exceed the social foundations of security; 3 - industrial society has exhausted its course and no longer has faith in progress and class consciousness.

This may be the case in the Brazilian society, and more specifically, in the VS community. However, the interpretation of an individualization or reflexive process which leads to responsible decisions and behaviours cannot be adapted to this reality (BECK; BECK-GERNSTEIN, 2003). The VS society is just at the beginning of the process, believing that “progress” is still necessary and that its foundations lie in industrial development. When Beck follows Douglas’ proposition (1982), he defines risk as a *socio-cultural product*, a concept applicable to the reality of the VS society, which is still masked by the stigma developed through history.

Respondent H (interview 16) represents this cycle as the “obstinate” past, stating that the unregulated development of the tanning industrial sector resulted in the municipality of Estancia Velha^{iv} producing, during the 1980s, an organic load of industrial waste equivalent to that of a town with a population of 1,600,000 people. The problem is that the population of this municipality at the time was 14,200^v.

According to Goffman, society establishes a means of compartmentalizing people and selects a set of attributes which it perceives as common and natural for the members of each of these categories. It establishes categories to which people must belong. That is, society determines the external standards which enable individuals to predict category, social identity and relations with the environment. A social model of the individual is created and, through experience, the created social image of the individual is not always invisible. This image may not correspond to reality, but it does refer to what Goffman (1993) denominates “virtual social identity”.

Beck argues that society sets external standards for individuals and this allows us to observe their category, social identity and relations with surroundings. He states that “the definition of danger is always a social and cognitive construction” (1997, p.20). Furthermore, he argues that modern societies have reached the limits of their own model and they are not changing, or reflecting on, the effects of this. They continue to pursue a policy of *more of the same*.

Meanwhile, individuals' autonomy and their participation in politics is being stimulated and discussed across the world. The problem lies in the fact that this politics, or this ideal, is not equally applied within the new international division of labour put in place by political and economic globalization. In this context, Giddens is closer to the Latin American reality when he argues that the state needs to be more active, given that its traditional role has had little effect. According to this author, Latin American States are over-bureaucratic and corrupt and have done little on behalf of their citizens. It is therefore necessary to remodel contemporary states so that they can be powerful again. However, they must be different from how they were in the past, more open and more transparent. Furthermore, governments need to treat their citizens as clients and not as subjects.

However, it is difficult to ask social actors to be more autonomous and participate politically if the State is corrupt and based on assistencialism. Amidst so much poverty, unemployment and social inequality, how can third and fourth world countries be in a position to demand a healthier environment if often the only thing in their minds is feeding themselves: "will I have food"? Who is responsible and who is to blame? In an integrated (global-local) analysis, this is the result of imposed policies and "insensitive" governments which, because of populist and electoral strategies, invest in uncontrolled technological progress. Therefore, before blaming workers and civil society for engaging in industrial activities which are potentially harmful, we should ask: which type of society do we find ourselves in? Would it not be the type Beck describes as industrial society, based on the strong principles of the first modernity?

Following the *macro and micro* or *global-local* analysis, we observe, with regard to social relations, the creation of "networks" (CASTELLS, 1999) and events which move closer together regardless of their physical distance. According to Giddens (1993) this means the *dissociation of space and time, the necessary conditions to drop anchors*. On the one hand, within this system it is possible to interact with various actors, regardless of their surroundings; on the other hand, the "roles" of each actor are not clearly defined, resulting in uncertainties and weakening democratic autonomy. The lack of definition of the global context means that individuals may feel confused in relation to their choices and actions. That is, these relations (macro/micro, global/local) do not necessarily provide us with political freedom of choice.

A clear example of this is found in VS. The tanning and footwear industrial sector has consolidated its export market. In relation to leather, products are sold (exportation) whilst 89.3% (*wet blue*) of the contamination (solid and liquid waste) remains in the production area. That is, the globalized structure means that a semi-finished product is sold cheaply and without any environmental concerns, because the product is "almost clean". The controversy lies in the fact that the main purchasers of this product are supposedly the nations which are most aware of the importance of "clean technologies" for the world. They have been advancing the debate on the environment and are praised for having better environmental legislation: the European countries. This is recognized by public administrators and by business leaders themselves (FIGUEIREDO, 2008). What, therefore, is missing? The following transcription shows the views shared by most entre-

preneurs and also advocated by some public administrators. It reflects the dissatisfaction and wishes of one entrepreneur.

I don't understand why things are this way: today, in Vale do Rio dos Sinos, we have the entire structure in place to produce hides right through to shoes. We were the first in Brazil to work with leather. We have a qualified workforce and all the shoe industry is based here, a qualified workforce and nothing happens. I will give you the example of the tanning houses: today, some factories work with a part of the production. Imagine there is a tanning house which goes as far as manufacturing the wet blue. The leather is almost ready, but this is a process which employs very few people and produces 90% of all the waste and other countries, particularly the European countries, take advantage of this. Look, the only countries which were still producing a while back were Italy and Spain. But legislation is so strict over there and people complain, so they stopped production. It's simple, as I said before: raw materials, a qualified workforce and industrial technology. But the product leaves the country after employing 100 people, whereas if we used the product for the whole process, we would employ over 1000 (Interview 30, Businessman E).

Fortunately, in his latest writings, Beck (1998, 1999, 2000 and 2002) also suggests that poverty attracts risks^{vi}. Does it attract and/or is it attracted by risks? That is why we ask "what is missing?" given that most people recognize and want something different. They reject having to always be in the hands of the international market. Apparently this is how the global market functions, ruled by a globalized economy, setting the rules of the game, and as we have seen, backed by a new international division of labour. Let us recall Beck (1997): *Not everything the head wants the hand does*.

The inherent risks of the globalization process are also known: risks are democratized and become independent of the production process - they can all be placed, for example, hides are 'tanned' in VS and shoes and bags are bought and used in Europe. In his most recent works Beck re-enforces and insists on the fact that we not only live in a risk society but in a society of global risks.

In the same way that threats and signs such as climate change, earthquakes and cyclones are produced in a globalized way, the products manufactured in Brazil are also globalized by way of the world market, sharing risks, which "sooner or later" will affect everyone. To us - and from a local perspective - Beck's (2002) idea that the main problem with society relates to the distribution of risks and not wealth - as is the case with the industrial society - seems utopian.

Beck's macro analysis prevents us from thinking that the distribution of risks is also socially stratified. Therefore, we should not be deceived by the benefits some populations enjoy from living in certain countries. Bell (1996) argues that socio-spatial segregation results in certain regions within the same country (or city) being more affected by environmental problems.

Following Bell's reasoning, when analyzing the risks of the tanning industry in VS, it can be observed that the move of the *dirty industries* away from the developed countries to the South of Brazil (last decade of 20th century) is once again taking place. However, this is now an internal move, as the tanning houses migrate from the South to the North of Brazil. For most businessmen, investment is moving to the states in the North and North East regions of the country due to increased economic benefits. In the survey, 67% of directors answered positively to this specific question (*often* and *always*, table 1). Nonetheless, as can be seen from graph 1, when the question was expanded to include all sample groups, the number of positive replies decreased: 45% answered *often* and 14.01% answered *always*. The local governments which receive these investments are not concerned with the distribution of wealth, environmental issues or the distribution of risks (second modernity). Instead, this society's mindset belongs to the start of the industrial period, thinking in terms of competitiveness and exploitation of natural resources, that is, development at any cost. This is evident by the fact that, according to graph 2, the population also welcomes the growth and continuity of the industrial sector.

Data obtained also reflect social inequality and internal competitiveness in the country. The populations who live in the most vulnerable areas are more exposed to environmental problems and illnesses. The situation is so dramatic that this population dismisses these risks so as to enjoy benefits such as employment and an improvement in subsistence levels. Garcia (2004) helps us to understand this situation. According to him,

the processes of social structuration fostered by the distribution of risks are different from those driven by the distribution of wealth. Differences lie, above all, in the fact that the historical dynamics of conflict appeasement in face of economic growth is undermined by an increase in tensions around technological hazards. The dividing line between those who economically gain and lose has profoundly changed. Some business sectors benefit from risks, whilst others sink. Workers are also divided: the unitary definition based on the ownership of the means of production is abruptly broken into those who are employed by sectors who benefit from risks and those employed by sectors hindered by them. Similarly, a geographic division is established between toxic and clean regions and in this context, groups are no longer divided into a social hierarchy, but according to their spatial location within a degraded landscape (Garcia, 2004: 257).

Thus, we could argue, from a local point of view, that risks are disseminated and legitimized in actual areas of the planet and that these areas may be affected by the decisions of others, who in their main do not share the same space^{viii}. This is evidenced by the actions of the governments of the North and North East regions of Brazil, and other regions under threat. Similar to actions taken by the governments of the South of Brazil and even by European governments before them, they have opted for immediate economic development, which will certainly be based on natural resources and the basic

subsistence needs of the poorer population. As Sachs (1996) argues, in these situations the search for the *common good* represents the *altar where future resources are burnt to salvage the ruins of the present*.

In this case, social inequalities result in a few exploiting natural resources for their own benefit, whilst moving away both spatially and in time from the negative consequences. However, the same social inequalities also mean that disadvantaged groups tolerate the consequences of development based on exploitation. Non-equitable distribution and its serious consequences for the environment lead Bell (1996) to conclude that the environmental crisis is above all a power crisis.

In face of the perception of risks, a “political” and “cultural” analysis is crucial in order for societies to determine their own future. Mary Douglas (1996) argues that risk awareness and individuals’ choices in face of these risks, as well as the choices regarding risk, are directly associated to the ideals of moral and justice. Along the same lines, Beck (1999) argues that risks form part of a social category, mainly because they can be reproduced by technologies which affect society. They symbolize the institutional crisis of industrial society.

Taking this analysis to the level of social relations, which are necessary for construing risks, it can be argued that the VS community classifies risks according to their *relative convenience* (DOUGLAS, 1992; DOUGLAS, 1996): people prioritize industrial development as a basic and immediate need. Therefore, they disregard the dangers of living with these risks, accepting them as part of normality. An example is the case of the people who were affected by the smell of the tanning houses when they arrived in the city (VS) who, over time, took this smell to be natural as it became part of their lives. Douglas (1992) calls this process *unconscious incorporation* which occurs through socialization. That is, the social groups living in these places stimulate and codify risks, a process denominated by Douglas (1996) as social interaction. The quotes below partly show how this socio-cultural construction occurred:

when I arrived in ‘the city’ [*a man speaking*] I vomited, I had migraines, it was very difficult to take the smell. But now at home, my children, no one feels anything. I think that there is something in it, when people like you come from outside the smell bothers them. I think that our bodies are already used to it all. I remember once, when I worked in the tanning houses and we even ate there and people outside thought we were pigs^{viii} (Interview 25, Resident E).

When I was child, I used to take lunch for my father, and I stayed around, in the tanning house, looking at the machines. I’ve been in love with the work since then. When I was 14, I went to work in the tanning house during my school holidays. When school started again, I received a formal employment offer as a registered employee, with working papers. There was no way out, I stopped studying and became a permanent worker (Interview 8, Worker H).

Wildavsky and Douglas (1982) argue that to understand “risk selection” we need to understand how we select our institutions and how we want to live. According to these authors, *common values lead to common fears* - there are implicit agreements on what *not to fear*. Therefore, the VS society is consistent with its fears (with what it fears) or with the risk choices which determine the socio-cultural construction of the region. Thus, it is possible to justify that the political debate on risks is not addressed from an exclusively scientific point of view. According to this structure, blaming or making the tanneries responsible for environmental crimes was not sufficient to change attitudes or perceptions of the technological risks of industrialization (tanneries). This is because VS “responds” to an internal order which is based much more on socio-cultural factors than on the importance of the original facts.

This theory is further elucidated when we analyze the VS community and see that it is directly exposed to industrial risks which have been proved to be real and which, above and beyond the latest events (the death of 100 tonnes of fish in the *Rio dos Sinos*), a consequence of the recent past, have also led to the death of workers. These fatalities were seen by most interviewees as workplace accidents and not as contamination (actual risk). The first quote represents the discourse of the majority. On the other hand, the second explains why thinking this way is a big mistake: this was a case of contamination.

With all the experience I have of the tanning houses and having lived here, I have heard many rumours of people turning up with ulcerations on their skin because of the chromium, but what can really be said about the death of the three young people who went to clean a sludge vat and died, this was an occupational accident, they were not careful enough (Interview 22, Resident B).

This is an industrial activity which has many impacts and many risks. In fact, I experienced a dramatic episode: it has to do with a student with whom we used to work in a research group at the time (...) and, in this episode, I lost a student who died inside a vat where industrial waste was stored, liquid waste, sodium sulphate. This boy was very careful, but when sulphate is concentrated, we can't smell it, because it is *neuroleptic*, so you faint (this gas is extremely aggressive). And this boy put a hose inside the vat to take the sludge out, except the hose got stuck. When he bent down to see what was happening inside the vat, he fainted, fell inside the tank and drowned to death. His mate came to save him and also died. Then another worker came to save both of them and died too. When the fourth worker came to try and do something, he also fainted, but he managed to get out of the vat alive and was in a very bad way when he was taken to hospital (...) almost five people died inside that vat. I was the first person to take him out of the tank. When I discovered he was a student of mine, I felt very bad. It was very difficult telling this boy's family. This is a good example of the risks related to this activity, *tanning*, with (high) concentrations of a number of different chemicals. It was a tragedy! (Interview 16, Public Administration representative H).

How do we identify how people select risks? Douglas and Wildavsky (1982) argue that the bureaucratic system is hierarchical and individuals define their values and behaviours according to individualistic characteristics, disposed to the market which guides their private lives and particularly geared toward profit-making. Everything expounded

so far justifies the lack of concern for the distant future. That is, the main priority is employment and/or satisfying hunger and this is likely to be the case in VS.

Douglas (1985) develops this topic further when she argues that the *acceptability of risks* must relate to the quality of life and moral principles of a particular society, that is, their values, institutions and culture. In VS the crisis in the leather and shoe-making industry threatens the historical basis of this society. This explains that the acceptability of risks is largely determined by the social history of the region, based on the leather industry.

Here both Beck and Giddens criticize the limits of technology when analyzing risks. In the case of VS, the theories of Beck and Giddens are adequate for understanding that often social definitions of a political-economic nature are influenced by *macro-structural* interests (companies), institutions representing the industrial society (FIERGS [Rio Grande do Sul State Federation of Industries]) and the State (FEPAM [Rio Grande do Sul State Foundation for the Environment]). Scientific groups are dismissed by all these institutions, as answers are sought to so as to protect these organizations, whilst placing the responsibility on others. Thus, risks often lead to employment positions rather than instigating serious technical and scientific research.

Both Giddens (1998) and Beck criticize the theory of *ecological modernization* (EM), albeit not in an explicit way, when they argue that it is impossible to address all the risks generated by modernization through more modernity, as EM proposes. They also argue that the advancements produced by scientific and technological knowledge would be equivalent to technology itself on account of environmental damages. They claim that in *reflexive modernization* (Beck and Giddens) the political elements which should be upheld in discussions about risks are present within social values which are used to set strategies on the acquisition of scientific knowledge.

There is no doubt that the *risk society* theory and Beck and Giddens' theory of *reflexive modernization* help us to think about environmental problems and the industrial development crisis in the *Sinos Valley*. Above all, they help us to understand that a globalized society should (also) lead to a globalized reflexivity, changing the perception and attitudes of agents and redefining the relationship between "society and nature".

In fact, Beck (1998) also recognizes that threats produced during the last three centuries have the same origin: the consolidation of industrial modernization. However, this argument cannot be generalized. Industrialization engenders risks which are impossible to define scientifically (such as terrorism and nuclear threats). There are also other risks based on a loss of trust in tradition but they are not applicable in VS where there has not been a loss in trust in the industrial tradition. Indeed, this trust, passed down over a period of a century, still re-enforces and maintains the tanning industry.

Giddens (1993) clearly sets out that *tradition* is intrinsic to modernity and it is here that the reflexive organization between space and time occurs. Thus, traditional cultures become limited as modern reflexivity develops, so they seek to re-interpret tradition, whilst modern society moves toward a different system: production.

We do not disagree with Beck and Giddens' argument regarding *reflexive modernization*. However, it is essential that this theory is given careful and serious consideration when applied to a society like Brazil. It is a society which is still negatively affected by

the global political-economic system, where environmental risks are unequally distributed and institutional practices and forms are marked by a belief in the tradition of the State. In the past this State established a policy of suppression so that its decisions would not be questioned. Today, to provide an immediate answer, it does not promote *reflexivity* in society, but encourages a populist and assistencialist type of politics. Thus, in face of the facts imposed by politics and development based on exploitation, civil society is concerned with its immediate problems (such as hunger, violence and unemployment) whilst being committed to development and “security” which are represented by industrial society.

Final Considerations

It is important to stress that the economy of the VS region is based on the development of the tanneries and footwear industries. People who decided to migrate from the rural areas to the city found job opportunities in these industries. This population was negatively affected by the policies implemented in the 1970s and small farmers did not earn enough to continue in agriculture. Meanwhile, the tanning industry was developing very rapidly and provided incomes which seemed very high for most workers who up to that time had been living on the margins of society.

The historical formation of this industrial society was based on paternalism. Everything was set up for the development of the leather and shoe industry, rather than for individual endeavour. Interviewee H (Interview 16) further clarifies this point, “it is impossible not to admit that progress arrived with the tanning and footwear industries. On the one hand, opportunities became more limited, while on the other the industrial sector in this region (VS) produces 35% of the GDP of the state of Rio Grande do Sul, whilst encompassing only 1.5% of the total area of the state”^{ix}.

As the interviews and the numbers from the survey applied throughout this research show, industrialization and jobs are among the most important concerns of the *Vale do Rio dos Sinos* community, as observed in *graph 3*. Industry owners have the support of the population, whilst governments are blamed for “evils” which are sometimes ambiguous. For example, at the *economic level* governments are blamed for the fact that industries neither improve nor invest in their facilities. Nevertheless, environmental problems in the region are blamed on a lack of state monitoring, thus making industries and civil society less liable for the preservation of the environment.

At both the practical and theoretical level, it is difficult to explain the reality in VS using the theory of *global risk society* (BECK, 2002). This is because of the way the risks of national and international political economy are currently shared^x. Risks are unequally (neither democratically nor fairly) shared by wealthy countries, displacing industries which cause ecological risks to poor countries. Perhaps this strategy is a form of *ecological modernization*, a way of specifically restricting these objectives to developed countries? If the “global risk society” theory proposed by Beck and pursued by Giddens needs to be reconsidered in relation to the reality of the Brazilian society, it is even more difficult to consider and find points of agreement in relation to the theories espoused by *modernizing*

ecologization, which challenges Beck's theory by putting forward an apocalyptic pessimism or eco-alarmist view of modernity (MOL, 1995).

Ecological modernization is based on business and technology. It proposes that industry owners should be the main agents for change. According to this theory they should keep as much as possible to legal precepts, acting in a responsible manner. The topics most discussed at present relate to clean technologies and controlling contaminating emissions.

Some socio-economic analyses show that private capital uses public goods (the environment), maximizes profits and benefits, but shares environmental damages. Thus we could refer to the "indifference" of a society which monopolizes and centralizes the market in the industrialization of leather, footwear and other components. Here there is a double "insensitivity" which is shared: that of the "industry owners" who are committed to uncontrolled development, exploiting the environment without providing proper treatment and a "public administration" which has been permissive toward this type of progress.

But in actual fact the relationship between companies, the economy and environmental protection are more complex. As this case study of leather production shows, the chain of responsibility goes from the acquisition of raw materials right through to the consumption of products (shoes or bags, etc.). The question therefore is, how do we think specifically about this structure at a local level?

In the case of the VS tanneries, this would be currently difficult or impossible to do, because the productive system and the market regulated by macro-economic structures would have to change. This market, from raw materials to the production of leather, does not seek to *restrict or reduce production to promote environmental protection*; on the contrary, devastation is increasingly aggravated by the growth in cattle-ranching^{xi} and by the migration of the tanneries from the South to the North, Centre and North East of Brazil. Thus, it seems to us, that this case is not characterised by the promotion of environmental preservation, the basis of Hajer's (1995) ecological modernization theory.

In principle, it can be observed that EM can be more easily applied to developed countries where levels of inequality are lower. Similarly, both this theory (EM) and the *risk society* theory have been recently criticized for arguing from the specific perspectives of Northern Europe and it is difficult to associate them to the situation in developing countries.

With regard to the risk society, the main problem relates to the linear nature suggested by Beck when referring to the transition from a class society to a risk society (BECK, 1998). Guivant (1998, 2001) argued that Beck uses highly industrialized societies to develop his theory, not accounting for factors which are particular to less developed societies. It can be observed that, on the one hand, the Brazilian society has serious problems of social inequality, in particular with regard to income distribution. On the other hand, the country experiences the global problems of the risk society. The question is that the risk society's proposal of reflexivity is far from becoming a reality. Brüseke (1997) criticizes Beck's theory for its generalization. He goes as far as claiming that his proposal is nothing more than *territorialized sociology*.

Nonetheless, it can be concluded from this case study and the basic needs of the Brazilian society, such as employment and work, that risks are manifested as a *profitable business*. What matters is that both sides are satisfied: large industries are able to exploit the workforce and natural resources, whilst the poor population can have access to jobs and enough income to cover their needs.

Notes

ⁱ Source: RAIS (www.rais.gov.br).

ⁱⁱ This study is based on the Ph.D. thesis of one of the authors: FIGUEIREDO, J. A. S. *¿Indiferencia o necesidades insatisfechas?: la cuestión del riesgo tecnológico en “Vale do Rio dos Sinos”* [Indifference or unsatisfied needs? the question of technological risks in the “Vale do Rio dos Sinos”]. Madrid: 2008.

ⁱⁱⁱ Following the same interview assumptions, the graphs are also partially and exclusively used in order to quantitatively show the forms of behaviour and perceptions of the actors participating in this study.

^{iv} One of the municipalities in VS

^v Documents from the Estancia Velha government. Data from the 1980s.

^{vi} Beck sees the Brundtland Report as a great promoter of the “poverty-wealth” debate. According to Beck, it is important to see that both wealth and poverty stimulate environmental degradation.

^{vii} There is no need to be near a nuclear plant or within a “simple” tanning house - profits are all important. This population (surrounding the industrial area) believes that people are not being harmed, they benefit from employment opportunities.

^{viii} This last statement (“we ate in the tanning houses”) also appears in other interviews.

^{ix} In this segment the interviewee explains that the main outcomes were the precarious subsistence conditions of some people, given that 91% of this population is urban.

^x Garcia (2004) and other authors criticize Beck for a lack of empirical studies. Pages 260-261 of the book “Medio Ambiente y Sociedad: La Civilización Industrial y los Límites del Planeta [Environment and Society: Industrial Civilization and the Limits of the Planet].

^{xi} The Ministry of the Environment Secretary, Azevedo stated “loggers are not responsible for the large areas of devastation”. According to the Brazilian Institute of Geography and Statistics, between 70% and 80% of logging areas are turned into pasture land. En: <http://blog.ecodebate.com.br/2008/03/05>.

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Submitted on: 19/02/2013

Accepted on: 31/10/2013

<http://dx.doi.org/10.1590/1809-44220005631>

CONSIDERING RISK THEORIES IN RELATION TO A CASE STUDY IN THE SOUTH OF BRAZIL

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Resumen: Esta investigación indaga la percepción de los riesgos medioambientales relacionados a la industria del curtido, en Vale do Rio dos Sinos, Brasil. El análisis se basa en la teoría constructivista para explicar cómo surge la percepción del riesgo. Aunque el enfoque de este artículo se centre en una revisión teórica sobre las teorías del riesgo, éste se fundamenta en datos recogidos para una investigación más amplia, en la que se aplicaron 307 cuestionarios y 32 entrevistas a distintos actores (trabajadores, administración pública, ONGs, vecinos y empresarios). En relación a la percepción de los riesgos de la industria del curtido, veremos que está profundamente insertada en la formación social, histórica y cultural de la comunidad del Vale do Rio dos Sinos. Por otra parte, el contexto local enfatiza la dinámica de la industrialización como base del progreso; así, incluso identificando en parte los riesgos, éstos son negados o silenciados por la dependencia económica (empleo y renta) del sector industrial.

Palabras clave: Medio ambiente. Percepción del riesgo. Industrialización.

Resumo: Esta pesquisa indaga a percepção do risco ambiental e a relação com diferentes atores, relacionado a indústria curtidora, no Vale do Rio dos Sinos, Brasil. Tal análise encontra-se na teoria construtivista, explicando como surge a percepção do risco. Ainda que o foco deste artigo centre-se numa revisão teórica sobre as teorias do risco, o mesmo se fundamenta em dados coletados para uma pesquisa mais ampla, onde foram aplicados 307 questionários e 32 entrevistas a diferentes atores (trabalhadores, administração pública, ONGs, vizinhos e empresários). Em relação à percepção dos riscos, veremos que está inserida na formação social, histórica e cultural da comunidade do Vale do Rio dos Sinos. Por outro lado, o contexto local enfatiza a dinâmica da industrialização como base para o progresso; assim, mesmo identificando, em parte, os riscos, os mesmos são negados ou silenciados pela dependência econômica (emprego e renda) do setor industrial.

Palavras chave: Meio ambiente. Percepção do risco. Industrialização.”

Abstract: This study investigates the perceptions of environmental risks and the relationship between different actors in the tanning industry in the Sinos Valley region (Vale do Rio dos Sinos - VS), Brazil. The analysis is based on constructivist theory, explaining how risk is perceived. Even though this study focuses on a theoretical review of risk theories, it is based on data collected from a larger empirical study, in which 307 questionnaires were applied and 32 interviews were conducted with different actors (workers, public administration officials, NGOs, residents and entrepreneurs). In relation to the perceptions of risks, it was observed that they are embedded in both the social formation and the historical and cultural community of the Sinos Valley. However, the local context emphasizes the dynamics of industrialization as the basis for progress. Therefore, although members of the Sinos Valley community do partly identify these risks, they are either denied or silenced by the community's economic dependence (employment and income) on the industrial sector.

Key-words: Environment, risk perception, industrialization.
