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THE ROLE OF ENVIRONMENTAL ACCOUNTING IN ORGANIZATIONAL CHANGE. AN EXPLORATION OF SPANISH COMPANIES *

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Abstract

The critiques originated by earlier theorization of environmental accounting, as a way of building environmentalist visibility of the businesses, led Gray et al. (1995) to relate environmental accounting to the dynamics of organizational change with a view to assessing the role that environmental accounting has in the change of business to the environmental agenda. In order to investigate whether Gray et al.'s (1995) model and conclusions apply to a different context, we have conducted an empirical study in Spain. We consistently found (a) that Spanish organizations are following a first-order change. (b) Colonization and evolution types of change do not imply second-order change. (c) The use of environmental accounting is coupled with an intent to negotiate and control the environmental agenda. In addition, we found that (1) both negotiation of the environment and the opening of new discussions take place in the same organization. (2) This could be explained by the existence of two kinds of discourses, factual and idealistic, which could be the sign of a potential internal incoherence (Grenwood and Hinings, 1988) that, in turn, would suggest the transition to a higher order of change.

Keywords: Environmental Accounting; Organizational Change; Colonization; Transparency; Spain.

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1. Introduction.

The growing amount of environmental information published in corporate reports, together with the involvement of both professional and academic accountants, has been seen optimistically by some (Gray, 1990; 1992; Rubenstein, 1992), who interpret this process as the construction of new views that could strengthen an environmentalist point of view of businesses. A Trojan horse (Gray, 1992) into the conventional managerial view of the organizations that is leading us to live in dangerous times (Bebbington et al., 1999).

However, this hopeful view of environmental accounting has generated strong criticism.

(a) By the avoidance of political issues, it has failed to articulate the mechanism of social change, and, it therefore suffers from a conservative bias (Tinker et al., 1991; Cooper, 1992). (b) Inherent to the creation of new areas of expertise by groups such as accountants, there is a danger of premature closure (appropriation) of the environmental agenda, avoiding departures from the conventional business management (Power, 1991). These two criticisms, in particular, led Gray et al. (1995) to study environmental accounting practice, and accountants, within the dynamics of organizational change, with a view to showing that “*environmental accounting can represent new voices, new visibilities and new discourses which can disrupt and encourage possibilities for change*” (p. 214). Their intent to provide arguments against those criticisms turned out to be unsuccessful, as they concluded that environmental accounting is currently being used to negotiate and to limit the concept of the environment, and that any form of environmental accounting involves a trade-off between transparency and control.

In this paper, by means of several interviews in which we ask organizational actors to discuss their experiences over time, we will explore whether Gray et al.’s (1995) theories apply to the reality of Spanish business. This will allow us to clarify the use of environmental accounting in Spain, and thus provide or remove more arguments to Gray et al.’s theory of the role of accounting in organizational change towards more environmentally friendly forms. Our main contribution lies in the use of Gray et al.’s (1995) model of organizational change, which has received little attention in recent literature, in a different context. While Gray et al.’s (1995) survey is based on the United Kingdom and New Zealand, Spanish culture and values differ from those of Anglo-Saxon countries and are closer to those of Latin-European and Latin-American countries (Hofstede, 1991)¹.

For that purpose, in section two, we will relate the theories of organizational change developed by Laughlin (1991) and Gray et al. (1995). By doing so, we will not only present their theories, but will give relevance to their discrepancies. Our argument is based upon several

interviews, the methodology of which is presented in section three. Subsequently, in section four, we present the opinions expressed by the interviewees in relation to the theory. This allows us to discuss the role of accounting in the process of (non) change followed by Spanish companies, a task that is undertaken in section five. Finally, the conclusions are presented in section six.

2. Laughlin's model of organizational change and its relationship with Gray et al.'s theory.

Laughlin (1991) contends that many of the studies of organizational change that were devoted to "*Context-free descriptions of change techniques and effects*" (p. 209) failed to capture the dynamics involved. Moreover, he advocates that these dynamics must be studied in relation to an environmental disturbance, that is, organizations are naturally change resistant, and will change only when they are forced to do so. However, it is not possible to anticipate which pattern of change each company will follow, once disturbed. To gain more insight about organizational change, Laughlin (1991) looks at theories relating to the organizational components and the different possibilities of change. He conceives the organization as being an amalgam of subsystems, design archetypes and interpretive schemes. The sub-systems are tangible elements such as buildings, behaviors, machines, persons, etc. The design archetypes (intangible structures, information systems, etc.) guide and provide coherence to the organization through a series of underlying values, which make up the interpretive schemes (metaphors, beliefs, values, rules, mission statements) which operate as shared fundamental assumptions about the functioning of the other elements of the organization.

Laughlin (1991) points out that organizations are normally balanced and coherent. Only an environmental disturbance will cause changes in the balance of the components of the organization, and, then, the organization will evolve to a different balanced state. Whilst Laughlin (1991) did not concentrate on a single environmental disturbance, Gray et al. (1995) studied specifically the response of companies to the jolt that "*a society concerned with the actual state of the natural environment*"(p.218) creates within organizations, for which these authors provide further details. When the change cannot be avoided, Laughlin (1991) distinguishes between first-order and second-order change. Initially, the organization's participants will attempt to change peripheral components that do not threaten the basic balance of the organization. This is called first-order change or morphostasis, which can be characterized as giving things a different appearance, while basically remaining as they have

always been (Laughlin, 1991). It is only through a modification of the interpretive schemes that an authentic change can happen, an alteration that penetrates the organizational genetic code in such a way that all future generations will acquire and reflect that change. This second-order change is called morphogenesis.

Laughlin (1991) found that the language of accounting was the primary vehicle for morphogenetic change in the European Railways case. Accounting was used not only as a language that enabled the change, but also as a means of taking over as the central element of the interpretive schemes. Then, from an environmentalist point of view, the question –as Gray et al. (1995) asked themselves– is whether environmental accounting is, or could be, an important agent of morphogenesis in those organizations that are changing as a result of the disturbance of the natural environment. In order to clarify Gray et al.'s (1995) position in relation to Laughlin's (1991), we will describe inertia (no change) and two change pathways within each order of change (rebuttal and reorientation, and colonization and evolution), as defined by these authors, with the help of some examples related to ecological crisis and environmental accounting.

1. Laughlin (1991) theorizes that inertia is produced in those organizations that successfully avoid the environmental disturbance. In the case of natural environmental disturbance, **inertia** shows that the environmental agenda has been ignored by businesses and, consequently, that both environmental management systems and environmental reporting demands or requirements have also been ignored (Gray et al., 1995). Inertia in (conventional) accounting reveals its inability to handle that part of the ecosystem that as free goods does not acquire market costs (Gray, 1990; Birkin, 1996). One can see an example in the consideration of CO₂ emissions by the Spanish electrical utilities. The rate of CO₂ accumulation in the atmosphere, the highest in the last 150,000 years (Flavin, 1997), has brought the most important world leaders to sign the climatic change agreement in 1992. In this agreement they committed their countries to reduce emissions of CO₂ to 1990 levels by the year 2000. In spite of this, the Spanish electrical utilities have ignored the importance of their CO₂ emissions as much from the point of view of their management as in terms of accountability (Larrinaga, 1995).

2. Laughlin calls his first class of change *morphostatic rebuttal*, in which the environmental disturbance induces limited changes which primarily affect the design archetypes but which do not challenge the basic equilibrium of the organization based on an unchanged interpretive scheme. Within the sphere of the natural environment (Gray et al., 1995) this change pathway could be identified by a view that “*the environment has nothing to do with us*” or “*our company does not have an impact on the environment*”.

3. If the situation is that the organization can not reject environmental disturbance, Laughlin (1991) maintains that not only design archetypes but also sub-systems will be transformed in some manner. But, *morphostatic reorientation* does not affect the basic coherence of the organization. This is corroborated by Gray et al. (1995) who identified companies that have adopted environmental initiatives (corrective actions, investments, information disclosure) with the main purpose --explicitly stated-- of reinforcing the current equilibrium of the company, based on conventional business values (financial savings, marketing, public relations) and images (long term survival, competitive advantage). This is consistent with the fact that the company uses environmental (accounting) information to improve its public relations (for evidence of this use, see Deegan and Rankin, 1996 or Moneva and Llena, 1996).

Coming back to the Climatic Change Agreement, global CO₂ emissions have increased by 113 million tones in 1995, to almost 6.000 million tones a year². Even worse than that, the International Energy Agency anticipates that for the year 2000 global emissions will be 17% higher than those in 1990, and 49% higher by the year 2010. Changes have only taken place at the level of signing agreements, while current patterns of resource consumption are being maintained, and many rich countries are not fulfilling their 1992 commitments (Flavin, 1997).

4. The third class of change identified by Laughlin, *colonization*, involves a second-order change, that is, it affects the core of the organization, its interpretive schemes. However, it is characterized by the fact that it is a non-elected situation. Laughlin (1991) proposes that this kind of change is promoted by a group within the organization that imposes fundamental changes in both the visible and the invisible elements of the organization, forcing other members of the organization either to leave or to accept a new organization. It is worth mentioning that, in colonization, the shifts in the design archetypes force changes in the interpretive schemes and, therefore, this class of change may have destructive or regressive consequences caused by the contradictions between new design archetypes and the previous interpretive schemes (Laughlin, 1991). However, after surveying organizational responses to the ecological disturbance, Gray et al. (1995) found views that could be identified with colonization and evolution, but could not detect adjustments within the interpretive schemes. This led them to theorize that colonization (and evolution) can be either morphostatic or morphogenetic. The articulation of this difference between the two articles is expressed in figure one. Subsequently, they studied only *morphostatic colonization*.

[Figure one: to appear about here]

Whereas morphogenetic colonization could not be found by Gray et al. (1995) in relation to this particular disturbance, they attribute the same motivation to morphostatic colonization as Laughlin did (1991) to morphogenetic colonization: the fear of the consequences of the environmental disturbance, that leads a company to act defensively. As a consequence of this, instead of bringing transparency into prominence, the organization tries to control and direct the change. It is henceforth likely that accounting will be used to negotiate and define the concept of the natural environment (Gray et al., 1995).

5. Finally, Laughlin's last type of change, *morphogenetic evolution*, implies changes in all the organizational components. However, unlike colonization the transformation is initiated by the interpretive schemes and characterized by a consensus of all its members, which is reached through an open dialogue that facilitates a new common vision of the organization that is deliberately accepted. However, Gray et al. (1995) do not identify the presence of a discursive dialogue –as proposed by Laughlin for the evolutionary change–, but simply the *opening* of new forms of discourse and the questioning of some central myths pertaining to the organization that certainly cannot be compared with the shift of the interpretive scheme. Therefore, they name this track *morphostatic evolution*, as shown in Figure one.

As was put forward in the introduction, the relevance of the use of these ideas is that the existence of environmental accounting could be either: (a) the sign of an evolution of business towards more environmentally friendly forms. Indeed, it is argued that environmental accounting could strengthen new accountability relationships, providing visibility to the employment / wasting of the natural environment, or, (b) an instrument of environmental reorientation / colonization, leading to or enabling a process of capturing the environmental debate by regressive (conventional business oriented) interpretive schemes. Consequently, environmental accounting could cause the most meaningful aspects of the relationship between humanity and the environment to be forgotten (Puxty, 1986; Tinker et al., 1991; Cooper, 1992).

Gray et al. (1995) explore the role of environmental accounting in this process, and adjust Laughlin's model, denying the existence of morphogenesis given their analysis of this particular disturbance, and concluding that environmental accounting is being used to control and limit the environmental disturbance. Greenwood and Hinings (1988) suggest that "*it is only from attempts to map tracks in different institutional settings that a richer understanding of organizational evolution and transformation will occur*" (p. 310). In the following sections we will explore the change patterns adopted by some Spanish companies and discuss the applicability of Gray et al.'s theories and conclusions.

3. Research method.

In order to investigate whether Gray et al.'s theory applies to a different context, we have analyzed nine Spanish firms located in different industries and with different *a priori* attitudes to the environmental issue. Data collection was based on a total of 15 semi-directive interviews, as well as on a search for relevant documentation in each case. Six companies out of nine were selected among those that replied to a previous postal questionnaire. Three more companies were added with the aim of giving a more complete picture of different attitudes and different industries, including the services industry. (A brief description of each case is offered in Annex I). We used the above-mentioned documentation to identify *a priori* the companies' patterns of change (see figure two). Then, we considered that four of them –A, B, F and I-- might be *a priori* classified as less progressive (inertia, rebuttal or reorientation) and the remaining five –C, D, E, G and H-- could be considered as more advanced (colonization or evolution).

[Figure two: to appear about here]

According to Laughlin (1991), it is the interpretive schemes (language or discourse), which provide coherence in an organization. The reverse is also true; it is the transition of this particular element which causes true organizational change. Individuals are not external to these discourses; they are passive transmitters of them, as well as active constructors. It is only through communication that we could acquire these corporate discourses. Therefore, we chose semi-directive interviews as the main method for data collection. We are not only interested in the structured component of the discourse (objectified reality, see Berger and Luckmann, 1966). The unstructured parts (such as idealistic viewpoints) are likely to provide us with more information about the potential for transition, especially in those cases in which the new balance and coherence has not been reached, and the company is in a schizoid position (Greenwood and Hinings, 1988; Laughlin, 1991). In-depth research methods, such as semi-directive interviews could give us an insight about managers' apprehensions and motivations, after their perception of the environmental disturbance, and so acquire the unstructured parts of the organizational discourse.

It could be argued that, for studying organizational change it would be more appropriate to carry out a longitudinal study. However, semi-directive interviews allow the respondents not only to express their current opinion, but also to discuss their experience over time. Moreover, cross sectional examination allows us to observe companies in different categories (Greenwood and Hinings, 1988; Laughlin, 1991; Gray et al., 1995).

Though we initially scheduled two interviews in each organization, in three companies (A, D and G) we could only carry out one, due to the reticence that they showed. Distrust or fear of being inconsistent with other organization's members could explain this. In the remaining six companies, we have carried out an interview with a corporate environmental officer –or, if there is no such a person, a high executive– and another interview with someone closer to operations management. In spite of the fact that at best we only interviewed two individuals per organization, we think that the collected opinions should give us an indication of the prevailing viewpoint of all the organization, since the individuals that belong to an organization are influenced by its dominant discourse.

Each interview was designed so that it was developed around three topics: (a) importance given to the environment by the interviewees and by the company; (b) environmental management systems; and (c) disclosure of environmental information. The interviews were carried out in April and May 1997. They were recorded and then transcribed for analysis. Only in case C did the person responsible for environmental issues refuse to be recorded. We also considered all the additional information that could be collected through personal observation or interviewees' marginal remarks.

The analysis has been carried out in two phases. Firstly, two members of the research team, always different from those that carried out the interviews, analyzed the data of each company. By doing so, we forced ourselves to document the information with greater precision and we avoided prejudices introduced by empathy in the interview. Secondly, we all met and presented the cases. This permitted new discussions and allowed us to relate the different cases in order to bring more internal coherence to the overall analysis³.

4. Patterns of organizational change.

The next stage was to establish a dialogue between the theories developed above and the revelations obtained in the interviews, in order to explore whether Gray et al.'s (1995) model and conclusions apply to Spanish organizations. More space is devoted to colonization and evolution, as these tracks are more significant for the purpose of this article.

Inertia.

The attitudes revealed in the interviews show that most companies have some consideration of the environment. The opinion that the environment does not affect their company at all was scarcely manifested, and thus seems to corroborate the conclusions obtained in other Spanish surveys (Carrasco and Larrinaga, 1995). And yet, ignorance of the topic has been visible in

some discourses, combined with some perplexity and irony, as the interviewee was suddenly asked by researchers about environmental issues.

“I don’t know, but intuitively I think that regulation..., but I don’t know. Don’t forget that at present our products... do not have much impact on the environmental issue (...) The only thing that affects us is that pine tree (LAUGHS) They wanted to remove it, but I was opposed. In fact what it produces are twigs on the roof and we have had leaks, but, well, it is only a matter of cleaning the roof” (A: financial director).

In the same vein, the case for the lack of pollution in Andalusia (Southern Spain), given its underdevelopment, is expressed explicitly in an astonishing fashion by a financial institution’s executive:

“In Andalusia, unfortunately, there are so few companies, so few factories that could have a direct incidence on the environment that, really, they don’t affect it” (I: center director).

This opinion reveals an ignorance of the environmental reality of the region and perhaps an attitude of rebuttal toward the environmental issue. The Andalusian gap compared in relation to the rest of Spain⁴ has not prevented the concentration in that region of 12% of Spanish firms affected by the IPPC regulation⁵ (Expansión, 1998); the generation of 16.7% of solid waste by 18% of the Spanish population (Junta de Andalucía, 1995); or the location of the only Spanish disposal site for nuclear waste.

Rebuttal.

There is evidence of an attitude of rebuttal in many of the cases (A, B, C, F and I). In accordance with Gray et al. (1995), we found a structured discourse that tries to legitimize the firm’s behavior. They do so in two main ways. On the one hand, in these companies there is strong evidence of the refusal to recognize the environmental impact of the company.

“This company, actually, does not have much to do with the environment” (B: administration director).

“This is a plant that is going to release few pollutants into the environment. It is a very high-tech factory” (C: personnel officer).

“This isn’t a company that makes fridges or sausages or beer, and it doesn’t emit smoke O.K.?” (F: president).

On the other hand, as responsibility for environmental matters become more obvious, the viewpoint changes with a view to diverting responsibilities away from the company, and this, in turn, can be achieved through blaming several stakeholders: (a) The environmental problems are marketed as the fault of product suppliers.

“With PVC there is now..., but I believe that that is the manufacturers’ problem” (A: financial director).

“These controls should have been undertaken by the manufacturers of the products that we only sell. Of course, we are required to ensure that the products meet certain standards, but it is the manufacturer that should control this more than us” (B: administration director).

(b) Given consumer sovereignty, companies are but their servants. Thus, environmental problems may also be customers’ responsibility.

“Up until now we have not had any trouble or rejection in the market with regard to PVC, but rather the contrary, demand increases more and more” (A: financial director).

For an argument against this view, the European Commission approach (see EMAS)⁶ recognizes the importance of the fact that the companies should be involved in the environmental issue, without waiting for market signs (see also Lindblom, 1984 and Mouck, 1994). (c) But, according to our interviewees, the Government is the preferred subject for burdening responsibilities. Their argument is that *If votes have given us this Government that allows us to carry out this activity, that means that this activity is all right*. Thus, if something has to be changed, the initiative must come from other constituencies, but not from the company.

“We are located in an industrial site that is certainly, I hope, well designed. It surely has advantages from the environmental point of view, I say that because we are relying upon the fact that if that is the course taken by the government, by the Spanish people, it is surely because that is the way it is” (C: personnel officer).

“I believe that the companies are not able, do not have the autonomy, the own will, to know what has to be done. That is to say, I believe that to know what has to be done must come from outside (...). The initiative must come from the Government (...), from private foundations, from universities, from organizations that have the ability and the means. Someone must say ‘listen, we believe that it would be advisable to’” (I: center director).

(d) Finally, even the ecologists could be blamed by the president of a Golf Club in the dry South of Spain.

“How is it possible that four ecologists come to be concerned about our company’s water consumption when they should go firstly to argue their point in those places, such as the town hall, public places, where nothing has been done about fixing the holes in their pipes so that water doesn’t run away?” (F: president).

According to Sethi (1978; quoted in Näsi et al., 1997), legitimacy problems occur when a gap between social expectations for corporate behavior and society’s perception of that behavior exist. This legitimacy gap is caused by the evolution of society’s expectations as, we hypothesize, is the case for environmental disturbance. This author suggests that there are four possible strategies in order to reduce a legitimacy gap. (a) Do not change performance, but

public perception of performance; (b) If changes in public perception are not possible, change the symbols used to describe business performance; a and b allude to the social constructionist view of legitimization, also called Legitimacy Theory (Buhr, 1998). (c) Attempt to change society's expectations of business performance; c denotes the hegemonic perspective of legitimization, also called Political Economy Theory (Buhr, 1998): And (d) change business performance. Clearly, the discourses identified in rebuttal could be placed in the attempts to change the public perception of performance.

Greenwood and Hinings (1988) argue that it is possible to split the movements of organizations into several analytical positions. After losing one archetype coherence, and before reaching another archetype coherence, a schizoid incoherence "reflects the tension between two contradictory sets of ideas and values" (p. 304). A double discourse was evidenced from the analysis of the interviews: On the one hand, a structured discourse that we have named factual discourse, which has been discussed above. On the other hand, an unstructured idealistic discourse, based on the personal conscience of the executives, but which is not necessarily applicable to their company, as was frankly expressed to us:

"We have a conscience, but it is not developed when it does not affect us. Of course, everybody has an environmental conscience, but when it impinges on something, it is finished" (B: financial director).

"I believe that it is a moral preoccupation for the common good (...) We are interested in looking after the community. The environment is one factor, but in all respects, as you might have realized, we try to be good citizens" (C: personnel officer).

We think that, in some sense, this implies a recognition of the environmental disturbance. This double perspective –idealistic and factual discourses– enriches the analysis, since this permits us to observe the dynamic nature of organizations and differentiate between tracks (Greenwood and Hinings, 1988). For Greenwood and Hinings (1988) rebuttal (aborted excursions) does not impose a passage through a schizoid incoherence. Our evidence reinforces this view as this new set of values is not reflected in new elements in the organization.

Reorientation.

Gray et al. (1995) contend that many companies try to reject the environmental threat, but they are not willing to be seen doing so. The limited response in reorientation involves shifts in design archetypes and in sub-systems, but always with a view to reinforcing the basic coherence of the organization. The discourses that we have identified in reorientation are consistent with Gray et al.'s (1995) results, as they are based upon economic efficiency, benefits, the

achievement of competitive advantages, ecological marketing or, simply, the existence of the company.

Again, factual and idealistic discourse can be analyzed separately. Only in case E, a Chemical company, is a structured discourse on reorientation found. In other cases –A, B, C and I–, unstructured idealistic viewpoints on reorientation were found. However, this fact has to be dealt with cautiously. These idealistic views express only personal concerns, but not the reality of what was taking place in the company. The following two quotes clearly state the difference between E (reorientation) and B (rebuttal).

“The environment is treated as a very important issue in a large company, just as was happening five or six years ago with the issue of quality management. It is not a matter of accepting the issue or not, as the very survival of the company depends upon the existence of verified management systems” (E: production director)

“They ought to put forward, to require, the means to avoid that this affects the water, the air, the atmosphere. There ought to be a requirement for measures that totally avoid this” (B: financial director)

Whilst the production director of case E is concerned with the possibility that the environmental disturbance could jeopardize the future of his company, the financial director of B is just thinking about that possibility, whilst it is not actually affecting his organization. This difference between the quotes of E and the quotes of A, B, C and I, can be observed in relation to the remainder of the issues around which reorientation viewpoints are expressed.

A second important issue deals with economic efficiency and positive benefits (the environment pays), as well as in negative (the environment costs) terms. The environment has a cost, not only because it can affect the organization’s activities through fines or any other contingency, but also because of the need for establishing corrective measures. Whilst Gray et al. (1995) did not explicitly mention this negative aspect, our interviews evidenced its relationship to reorientation.

“It affects the activity and the internal measures that must be taken with respect to the environment and this is a cost that must be borne” (E: environmental controller).

“Professionally or as a company, maybe I should wait until the Government requires me to do it. If they ask me, I will do it, if not, then maybe they are simply saying that I should spend 20 or 30 million (pesetas) to build a system to avoid pollution or noise” (I: center director).

Finally, the environment can also pay, particularly through ecological marketing and the achievement of market shares.

“I believe that it is a nice issue, now that it is spoken about so much..., to say “it is a very ecological company” (...) And even in advertising ... we could take advantage of

this issue, the environmental benefit. But always, of course, bearing in mind the quest for profitability within the company” (B: financial director).

“The issue has emerged in our advertising... well, in some way our corporate image is a [protected animal], it lends itself to this issue, so we have always said, as [the animal] is protected..., but up to now we have not considered incorporating any ecological reference in our advertising” (A: financial director).

Summing up, six (A, B, C, E, F, and I) out of nine companies should be undoubtedly located –given their discourses– in morphostasis. Though we found cases of ignorance in some discourses –identified with inertia–, most of the interviewees recognized the significance of environmental matters. The dominant discourse in these organizations tried to rebut the environmental disturbance by means of a “the environment has nothing to do with me” stance. This is reflected in very limited changes in the organization. Only in the case of E were attitudes and activities changing in accordance with morphostatic reorientation. This is likely to be because E is a Chemical company, and in this industry the environmental disturbance cannot be undertaken without some kind of reorientation.

Colonization.

In those organizations that were undertaking generalized changes as a consequence of environmental disturbance, Gray et al. (1995) found a significant strategy of skirting the issue. Consequently, in their opinion, the environmental disturbance would not have a great impact on the core of the organization. The organizations they analyzed did not undertake environmental modification, but attempted to limit its impact taking the initiative and seeking to define (to construct) their own environmental disturbance, guided by the dominant rationales of businesses. Therefore, it is difficult to conceive a morphogenetic change, and accordingly colonization receives the epithet of morphostatic.

In our study, two companies –cases D and H– were experiencing generalized changes in both subsystems and design archetypes. These companies have borne changes in subsystems: productive processes have been modified; current technology is, to a limited extent, being questioned, and, more importantly, the behavior standards of the organization’s members have changed:

“We have seen that, in fact, when you do things with respect, when you do them well, with care, with caution, with the adequate technologies to avoid (...) it is not avoidance, it is reducing the environmental impact of industrial facilities (...) There are always modifications, but they tend to be small, and those modifications relate rather to modifications in individuals’ behavior. That is to say, when you do not force someone to do something, but explain it to them and you tell them why, then, it helps the individuals to say: “hell, this is the time to act”. Those same individuals might

then help you, saying for example: "Why not place a container here? Lots of things are produced here which should not be thrown away" (D: environmental director).

Cases D and H are also undertaking modifications in design archetypes. In H there is an officer in charge of environmental management, and an operational department is devoted to the issue. The environmental officer is accountable to the board, and produces an environmental report. There are also control systems, on-line control systems of emissions and the environment penetrates many of the internal information systems (budgets, intranet, management control). Likewise, in D there is an officer responsible for environmental issues and an environmental committee that brings together all those people responsible for the functions involved. Systematic records are kept, employees are informed through the security committee meetings, and an environmental report is also produced. Both companies have implemented environmental management systems.

The motivations to colonize the environmental disturbance derive from the environmental *threat*. If there is a word that could define this type of change, this is fear (Gray et al., 1995). Fear of fines, of criticism or of losing markets. However, this fear is not paralyzing. The company, against its own will, develops a proactive attitude toward the environment that could be synthesized by the minimization of their own risk. To this effect, we consider very enlightening the taxonomy of different pressures, given to us by H's environmental controller. He distinguished between *compulsory* and *non-compulsory pressures*. Gray et al. (1995) offer a similar classification, except that what to our controller are compulsory pressures, to these authors are indirect business reasons. And what the interviewee considers to be non-compulsory pressures, Gray et al. (1995) consider to be direct business reasons. Clearly, H's environmental controller is more concerned by regulation and less concerned by the market, than Gray et al. (1995). Compulsory pressures are related to compliance with pollution abatement regulations, the pressures received from ecologists, society, etc.

"As the pressures begin to squeeze you all over, either pushing you from behind, and even though you want to defend yourself, they carry you forward. They are compulsory: the law, all those which I have mentioned, our own society, ecologists" (H: environmental controller).

"Regulation is affecting the companies tremendously, because whether we want them or not, Spain has accepted some commitments with the European Union. And among those commitments is the implementation of all the environmental regulations that existed before in Europe (...) and they have very dramatic consequences for companies" (D: environmental director).

Even though ecologists are frequently identified as large change drivers for companies (for instance in the case of Shell), in our interviews we only found some allusions. And unsurprisingly, when ecologists are important, they are compared to regulators:

“Greenpeace reports must be considered as seriously as a Cabinet report” (H: environmental controller).

A final source of compulsory pressure is the executive’s personal risk. The need for controlling the environmental risk is particularly apparent in case H, in which it is considered that non-compliance with regulation, signifies a direct risk for the members of the board, i.e., the executives’ risk of going to jail after a lawsuit for environmental offenses.

“That is to say, if I was a factory director, I would be interested in this subject, not perhaps because of market share, or because it may have been requested by my major customer, but because I can sleep at night if I know that no one is going to call me saying that the police have arrived because we have caused a toxic emission” (H: environmental controller).

In fact, the interest in the environment emerged in case H because the president of another important company in the industry was charged with ecological offenses, and, subsequently, H designed environmental management systems and responsibilities.

“The president of the company was lead to the witness stand charged with ecological offenses! (...). [Subsequently, in our company] board reports were issued asking what was going on (...) for certain individuals’ security, as despite the fact that environmental issues might be controlled from the shop floor, the one who is taken into the witness stand is the president of the company. If we have a person in charge, it is he who has to face up to the consequences (...) What firstly we will do is to cover all eventualities and afterwards we’ll see, when those points are dealt with, then things can be fine tuned” (H: environmental controller).

Turning to *non-compulsory pressures*, we found similarities with the motivations manifested by companies that were placed in reorientation. The main difference lies in that these companies perceive the environment as a real threat –connected with the central topic of this type of change: fear. This threat derives from a greater conscience and a better conceptualization of the implications of change than in the case of reorientation. The sources of non-compulsory pressures are diverse. Firstly, the customers:

“In addition, the big changes have been brought about by non-compulsory [pressures], that is to say, the view that environmental issues can be an opportunity for the company. I climb on the bandwagon, not because I’d go to jail or because I am going to have to pay fines, but because I realize that this can be good for business” (H: environmental controller).

“We had some important customers that were trying to persuade their suppliers to be environmentally certified (...) It’s true, we have had pressure from clients (...) It is a chain reaction, and it works” (D: environmental director).

In case D, a manufacturing company that does not have any link with the retail market, but with a few industrial customers, green marketing is severely criticized. Could it be because they cannot use it? Certainly the retail market is more interested in advertising than is the case of company D.

“Those companies that sell direct to the public, it is not that they are affected by what is colloquially called ‘green marketing’, it is that they are taking advantage of it. Logically, we cannot do the same and neither can any other company in this sector (...) on the other hand you will agree with me that what we have seen in the hypermarkets (green marketing) is a tall story” (D: environmental director).

A second source of non-compulsory pressure comes from the stakeholders that manage financial risk: insurance companies. This is apparent in the striking account of the experience of an electricity company:

“The first environmental audit carried out in [work center) astonished us. It was carried out by an insurance broker. The insurance policy said: “before fixing a rate we want to know what’s going on, tell whether you have piralens, fire extinguishing systems” They came, saw what was going on and the rate was fixed” (H: environmental controller).

A third non-compulsory pressure is specific to countries that are lagging behind on environmental issues. The pressure comes not just from international competitors, but also from the parent company, as is apparent in case D.

“[Our parent company] was a [Swiss] multinational. So they have taken the issue seriously, because, as you know, the level of conscience there is different to the rest of Europe (...) They wanted all their subsidiaries to implement environmental management systems (...) Therefore we began in 1993” (D: environmental director).

With respect to workers and unions, these companies have a great interest in their participation, but it does not appear to be a major motivation for change. The constant allusion to fear, as well as the above-mentioned classification reinforces the qualification of D and H as colonizing change. Particularly, if we analyze what is said by the environmental controller of H, he mentions pressures, but not motivations –as does the work of Gray et al. (1995)– which is expressed in much softer terms. The fact that change is driven by fear is reinforced by the use of the compulsory –or non-compulsory– epithet.

One characteristic of colonization is that change is forced upon the organization (Gray et al., 1995; Laughlin, 1991). But, as has been mentioned before, this change does not affect the interpretive schemes. This change safeguards the values and the unquestionable objectives of the organization. Its central myths such as short term benefit, growth, and secrecy continue to play their role. We will develop this point further as we consider evolution.

It is worth mentioning that while Laughlin (1991) anticipates some negative, unexpected or destructive effects of this type of change (note that Laughlin conceives colonization as morphogenetic), Gray et al. (1995) are much more cautious as a consequence of their reconsideration of this change as morphostatic. The analysis of our interviews provides more evidence on the fact that colonization of the environment does not entail shifts in the values of the organizations. On the contrary, it seems that this change pathway is followed so as to limit and control the influence that the environment would have on the company. In other words, these companies are trying to take the lead on the environmental agenda with the aim of directing and limiting its scope. In terms of political economy theory (Buhr, 1998), the companies are attempting to change society's expectations given a legitimacy gap.

Evolution.

The more proactive pattern of change identified by Laughlin (1991), evolution, is called morphostatic evolution by Gray et al. (1995), because they did not find any trace of interpretive schemes changes. These authors find at best two fundamental characteristics of morphostatic evolution: (a) the company starts to question its central myths (efficiency, benefit, growth or secrecy) and (b) it is open to new discursive forms both within the company, and between the company and its shareholders.

To begin with the unchanged interpretive schemes, central values of the conventional business view –short-term benefits, secrecy and business growth– are not questioned, even in the most advanced organizations. It must be remembered that companies are created to earn money:

“Companies are created to earn money and, therefore, anything that contributes to or brings about short to medium-term profits is fine, but it has still not been demonstrated that environmental steps taken by the companies are going to bring about profits” (D: environmental director)

“Money is the prime interest. That is to say, first interest where there is an economic influence in environmental issues (...) and afterwards interest where there is an influence on health” (H: environmental controller).

Second, it is not only true that secrecy was traditionally installed in Spanish companies, but also that it is still installed in many of them. Many Spanish accounting teachers have experienced the fact that when the student looks for financial statements as part of the financial accounting syllabus some SME's executives tell them that these are confidential, even though they are publicly available by Law. The fear of releasing information is reinforced when the information relates to environmental problems.

"We must show them [environmental reports]. They are publicly available. However, to make publicly available does not mean to publish them. Ha, Ha (...) One must take a lot of care with the information that is released" (D: environmental director).

But maybe the most important objective of businesses is growth. In their opinion, environmental degradation is not going to stop the expansion of traditional companies, since

"The companies are much more concerned, they have skilled people for these topics and, despite this, the sales volume and the business figures have been increasing and new companies have started up in this area" (H: environmental controller).

Nevertheless, contrary to that discourse, which does not question the central myths, new discourses appear in case H which do. We have identified two new rationales: (a) the equilibrium between the environment and the benefits;

"I think that one must transmit to people a balance between the benefit that companies yield and the environmental costs that they have" (H: environmental controller).

And (b) transparency and the need to be in touch with shareholders.

"If you have an environmental conscience and you are not transparent, then forget it. You're cheating the customer. Therefore, we think that everything that is transparent is good (...) Because the traditional secrecy that existed in the industry has been shown today to be very prejudicial. People are afraid of industry, among other reasons, because they don't know it" (H: environmental responsible)

Reinforcing the discourse of "better transparency than secrecy", an interviewee of H declares without reservation that his company pollutes in many ways, even though the information spread by this company, through its annual report for example, is very limited, as described in the next section.

"We have everything, we have all kinds of impacts that can occur. Because we have many facilities, each one with its own characteristics, all very different and with very different environmental impacts" (H: environmental controller).

This divergence between the dominant and the emergent discourse could again reflect a schizoid incoherence that could mean that perhaps some advanced organizations are in an intermediate point between morphostasis and morphogenesis.

Finally, it is difficult to classify case G, perhaps because of the fact that it is a service and non-profit company that belongs to several local councils. We identified in this company the opening of new discourses and the questioning of some myths, not only with respect to the compatibility between growth and sustainability, but also in relation to transparency and responsibility.

“There is an incitement to consumption above our possibilities, and almost nobody is willing to give up (...) Everybody speaks about sustainable development and so on, but in as far as it is the economic activity... I still continue to see many unresolved loose ends” (G: president).

“The more information about this, the better (...) When all this is built, we believe that it will be necessary to launch an information campaign for the older people to justify to them what they pay and so that they know what is going on and what is being done. (...) And to the younger people because they already know and furthermore they are very concerned. As they say “no drugs”, “no emissions”, because it is their own lives and the lives of future generations’ that is at stake” (G: president).

An explanation could be that the conventional economic discourse is not so central to this non-profit organization. This could permit a second order change. As Laughlin (1991) points out, organizations with weak interpretive schemes are more likely to experience a higher level of change.

Summarizing, those companies that are assuming generalized changes in both sub-systems and design archetypes, are mainly motivated by a fear of the consequences of environmental disturbance. These companies adopt a proactive attitude, limited to the control and negotiation of the environmental disturbance. That is to say, they attempt to lead the ecological agenda and so change society’s expectations of environmental business performance. Even though interpretive schemes remain untouched from the environmental point of view, we have also found the opening of new viewpoints and the questioning of the central myths, as Gray et al. (1995) propose. Finally, the argument that organizations with weak interpretive schemes could reach morphogenesis more easily is supported by the responses in case G.

5. The role of environmental accounting in organizational change with respect to the environment.

Since our results suggest that morphogenesis is not taking place, it follows that neither environmental accounting, nor any other element is generating any significant organizational change in the consideration of the environment. Nevertheless, in a few cases there is some kind of potential for morphogenesis. If we look at the quantity of modifications that are being

generated at the level of design archetypes in some firms, even though interpretive schemes are not affected, one would believe that internal contradictions could provoke a potential for morphogenesis. We must bear in mind that the environmental disturbance has affected the companies very recently (not the reverse), but changes use to take a long time.

To play any significant role at all in morphogenesis, environmental accounting should be coupled with the attribute of organizational transparency, “a window into the organization” (Gray et al., 1995: 231). We turn our attention to this attribute.

Setting aside inertia, we found that environmental information was published by organizations that have shown rebuttal (C), reorientation (E) and colonization (D and H) tracks. C’s parent company has a page on environmental issues in its annual report, as well as a sporadic environmental report of 33 pages, in Spanish, providing large pictures and some information on the products. Although the subsidiary has expressed to us their aim *not to conceal anything*, they did not allow us to record one of the interviews; neither did they provide us with a copy of their plant emission records. Although E was preparing an environmental report, it has not been published yet. E’s parent company does publish a report, including some information about its subsidiaries.

“I am finishing a report for [the parent company] on the environment for the year 96, and it has about 16 pages and 9 pictures of natural sites” (E: environmental protection coordinator).

The use of information that does not relate to the organization’s situation, intended for public relations, is a feature of reorientation. It is very unlikely that this form of environmental accounting could help to increase transparency and to build corporate accountability (Gray, 1997). The environmental protection coordinator of E states that environmental information disclosure has many advantages. However, and significantly, he told us that he could not give us the same information if we recorded the interview. Furthermore, later environmental information turns out to be not so good:

“Information can be manipulated, misinterpreted (...) That is the problem with information. For people with knowledge it could be valid, but for others it could turn out to be a destructive weapon. [Because of this] It is easy to criticize and to pillory someone for any reason. Everyone should be innocent until proven guilty” (E: environmental protection coordinator).

E’s limited compromise with transparency is, finally, evidenced by the use of the expression “to make publicly available” as an excuse not to publish environmental information (see below).

D produces an environmental report, as a necessary part of the requirements to obtain its environmental certification by the UNE 77-801⁷ standard. Note that UNE 77-801 requires that the certified companies make an environmental report publicly available, while EMAS requires that this environmental report be disclosed and spread amongst interested parties. What this means is that, in cases D and E, the expression “*to make publicly available*” was used as an excuse not to publish the environmental report. This is a clear symptom of the resistance of some companies to release environmental information. We contend that this is an evidence of their lack of transparency or, what we have called before, secrecy.

“We sell to few clients, so to publish it is like throwing money away because people browse and think ‘so what’? We do make it publicly available. We have obviously sent our environmental report to our customers, and it has been put on the notice board so that everybody can see it. Being publicly available means that anyone who requires that report has the right to see it, since it is not secret, since it is publicly available”
(D: environmental director).

We did obtain D’s environmental report, after the environmental director had consulted with the CEO! Their environmental report presents an eco-balance, with relevant environmental records, as well as standards for the next year. It is worth mentioning that it discloses records in such a way as to isolate the effect of scale –by production volume and number of workers–. It considers consumption and resource wastage aspects, as much as emissions to the atmosphere. Compliance with standards percentages are also presented –92% of compliance in the first year of operation with the environmental management system–. The reductions of consumption and waste range in different items from 4.5% to 73.3%. Reductions of emissions go from 11% to 48%, taking in this case overall figures (not adjusted by scale).

Company H seems to have a greater determination with regard to transparency than other companies. There exists in H an unequivocal aim of producing, and disclosing, an environmental report. Furthermore, in the annual report four pages are regularly published with large ecological motive photographs, and with what is being done on (a) quantitative emission records of SO² and particles; (b) the certification of centers regarding environmental management schemes; and (c) environmental commitment of the company (environmental policy statement). Companies H and E have also undertaken several initiatives to integrate in their local environment, through the programming of open days intended for students, local associations, etc. Its members also supported transparency and the recognition of a wide range of environmental impacts (see last section).

The lack of transparency in those companies that were located in the less proactive patterns of change is not surprising. This fact mirrors one unchanged central value: secrecy. We should foresee that a company experiencing a morphostatic colonization change will not change this value. What does seem more interesting is the opening of new discourses in H, as was discussed in the last section. But in reality this company is using accounting in more proactive ways. The company tries to reach a common understanding with the public about corporate environmental performance. That means not only producing creative accounts, but also convincing shareholders that this information interests them.

“[Environmental information] provokes misunderstandings, because everyone produces records... This is not regulated. That is to say, you produce the records as you want them... in your interests (...) one must take care with the disclosure of information, because not everybody understands things in the same way” (D: environmental director).

“[Environmental information interests] the competent authorities, that is to say, the Environmental Agency. I believe that it can be of interest to the universities (...) and to those affected by the company’s environmental impacts ... it can interest ecologists, but I understand that they still receive it with distrust. And it should concern shareholders very much. But I understand that they are still not sufficiently concerned. However, those who risk more money on the company, a bank for example, or a main shareholder, are already interested in all the risk aspects of the company. And nowadays among the risks to the company there is the environmental one (...) Our plan is not to distribute it separately, but to ship it to all those entities or societies that receive our annual report, all the shareholders” (H: environmental controller).

This process allows the most proactive organizations to build the scope of the environmental disturbance. Here, it is apparent that environmental accounting provides a window out of the organization (Gray et al., 1995), a way of changing society’s expectations about corporate environmental performance. Thus, the environmental controller of H is annoyed because the desired effects on the public are not produced. However, the worst aspect is that the information could provide ammunition for ecologists.

“Up until now we have not had anything that had turned against us. (...) Instead we have found disappointment in the sense that it has not produced the desired effects [in other companies]. Or even it has been met with total indifference amongst the public (...) The worst scenario would be that it be taken by an ecologist group, and they underline a certain sentence and run you down because you are not complying or you are lying” (H: environmental controller).

This gives rise to a complex situation, where they try to manage truth, to avoid the undesired use of information and to construct the public perception of the corporate environmental performance. H’s environmental controller thinks that this project is successful to some extent.

“To the ecologists’ dismay and unfortunately for them, it is the big companies who have traditionally been their enemies who have climbed first onto the bandwagon and who now wave the largest environmental flags (...) not only with the aim of cleaning their image, but because they can increase their market share” (H: environmental controller).

The undesired effect of the companies involved in this process is that a focus on mainstream issues, such as atmospheric and water pollution, is based on an end-of-pipe philosophy. This does not contribute either to avoiding the bigger ecological problems or to advising about the best organizations that could deal with this challenge.

The stated opinions illustrate the tension between the two explanations provided in the introduction. On the one hand, environmental reports could provide shareholders with a window to the organization, promoting visibility and transparency. On the other hand, it also could provide a window of the company to society and the ecosystem, promoting the entrepreneurial control of changes that are taking place outside. However, in the most proactive organizations identified, controlling the scope of the environmental disturbance and constructing the public perception of the corporate environmental performance, take precedence over transparency.

6. Conclusions.

We have studied the relationship between environmental accounting and organizational change, in the Spanish context, using Gray et al.’s (1995) model. Through the work we have described the discourses that emerge in different organizations, something which has allowed us to outline a map of organizational change for the nine firms that we studied. In six, out of the nine companies, either rebuttal or reorientation viewpoints were found. Conversely, cases D and H showed colonization viewpoints. Changes in the last organizations were driven by fear, as suggested by Gray et al. (1995). In spite of the fact that we identified in case H the opening of new viewpoints and the questioning of conventional business values, which Gray et al. (1995) identified as evolution, this company has to be placed in colonization, given its motives for change. On this point, we have found that in most organizations a multidimensional discourse emerges, which we have tried to break down into, on the one hand, factual discourse, and, on the other hand, an idealistic discourse that tries to be released from the previous reality. For instance, the transparency discourse is complementary to the factual discourse of fear, permitting H to show at the same time, though at a different level, characteristics of colonization and evolution. The distinction between factual and idealistic

viewpoints is also useful for separating different tracks. For example, while the viewpoint of fear is present in rebuttal and reorientation at an idealistic level, so it is in colonization at a factual level.

However, even though new idealistic discourses were found, what is apparent from our survey is that colonization and evolution does imply morphogenesis, as the central values of the organizations remain unchanged. Regarding the main question of this article, the analyzed firms lack transparency. Only the more progressive organizations are disclosing environmental information. However, the utilization of environmental accounting is coupled with an intent to negotiate and control both the scope of the environmental disturbance and the perception of corporate environmental performance. Furthermore, what is more intriguing is that the companies that are attempting to control and negotiate the environment are the more proactive ones, and those in which we have found the opening of new discourses, such as the need for transparency. This could be the sign of a potential archetype incoherence (Greenwood and Hinings, 1988) that, in turn, would suggest the transition to a higher order of change.

In relation with Gray et al.'s (1995) model, we have seen that is a useful tool for investigating the dynamics of organizational change as a reaction to the disturbance that social concern regarding the state of the natural environment places on organizations. We have identified different patterns of change and reached an understanding of the relationship between environmental accounting and other elements in organizations. One interesting issue which emerged from our interviews, is that perhaps organizations with weak interpretive schemes are more likely to experience a morphogenetic change.

Finally, in relation with the peculiarities of Spanish organizations, most companies are adopting first-order changes in relation with environmental disturbance. It is likely that our results provide an optimistic picture of the reality, as six companies were selected from amongst the 10% that replied to a previous questionnaire and three were selected for representing the different tracks of Gray et al. (1995). It is unlikely that more proactive companies exist. Secondly, for Spanish companies, regulation takes precedence over other pressures (such as the market), as can be appreciate not only when rebuttal companies use the lack of regulation as an excuse, but also when colonization companies are fearful of it. One further aspect specific to Spain is that the involvement of foreign companies is considered as an important way of reinforcing the environmental disturbance. Finally, one of the most crucial conventional values of Spanish organizations is secrecy, which makes it unlikely that

environmental accounting would encourage possibilities for change. While we believe that environmental accounting can build new discourses that might strengthen an environmentalist point of view of business, it is clear that it is not doing so nowadays.

Notes.

¹ Spain differs from the UK and New Zealand in all the four factors analyzed by Hofstede (power distance, masculinity/femininity, individualism/collectivism and uncertainty avoidance attitude), while the UK and New Zealand shared very common values.

² This in spite of the fact that the collapse of the former communist European countries has negatively contributed to these emissions. Otherwise it is estimated that the emissions of CO₂ might have increased, in that five year period, between 400 and 500 million tons instead of 113 (Flavin, 1997). Some countries are seriously considering the issue. For example, Germany has reduced its emissions by 10% between 1990 and 1995 –even though it is argued that the lion’s share of this reduction comes from the decline of the former German Democratic Republic. Most countries are not taking serious initiatives. For instance, the U.S. have increased their emissions by 6% between 1990 and 1996, departing from the doubtfully reputable position as the first contributor to the greenhouse effect.

³ Interviews and analyses were carried out in the Spanish language, and, thus, the quotes from the interviews are translated creatively so as to reveal the most appropriate meaning in the English language.

⁴ The case of the relative gap between Spain and the rest of Europe seems to have been successfully used by Spanish regulators as they have achieved less stringent objectives in CO₂ reduction in the European Commission negotiations.

⁵ Integrated Pollution Prevention and Control Directive of the European Communities (96/61/EC).

⁶ Eco-Management and Audit Scheme. European Commission Regulation, in which industries can voluntarily participate, implementing an environmental management system that includes the issuing of an environmental report, and the external verification of the whole system.

⁷ This standard, called “Sistema de Gestión Medioambiental”, was issued by AENOR (Spanish Association for Standardization and Certification), as a reaction to EMAS, and with softer requirements with respect to external auditing. Recently, it has been substituted by ISO 14001, which does not require the disclosure of an environmental report.

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ANNEX I: THE CASES.

To guarantee confidentiality of the information obtained from the companies, they are identified by a letter of the alphabet.

- A: Medium-sized company devoted to the wholesale distribution of building material, it has a stable financial position
- B: Distribution of electrical material, it has experienced a notable growth in the last years, with over 2.5 billion of pesetas turnover.
- C: Recently established, this subsidiary of a multinational belongs to the car components manufacturing industry. Has a considerable size and is certified according to various quality standards.
- D: This company was elected for reasons of its certification according to the UNE 77 -801 standard of environmental management. Subsidiary of a multinational, its activity of manufacturing and assembling precision materials has diminished, as a consequence of the strategy of the parent company, suffering thus an important cutback of both activity and workforce.
- E: Chemical company that in the last years has suffered some problematic financial situations, from which they have recovered after a change of ownership. This company was selected by virtue of its activity.
- F: This institution carries out a sports leisure activity, within the tourist sector, taking advantage of a magnificent natural site as a base for its commercial activity.
- G: This non-profit entity counts with some 50 workers and deals with the water supply and sewerage of an Andalusian region. It was selected due to the interest of a sector which has a special incidence on, and of, the environment.
- H: Electrical utility, this large company, vertically integrated, maintains multiple activities and its environmental impact is significant. Therefore it deserves special attention from both the public and the administration.
- I: Cooperative-type financial institution, it has an operating area restricted to a county and is found amongst the smaller Spanish financial entities.

Figure one: Equivalence between Laughlin's and Gray et al.'s models.

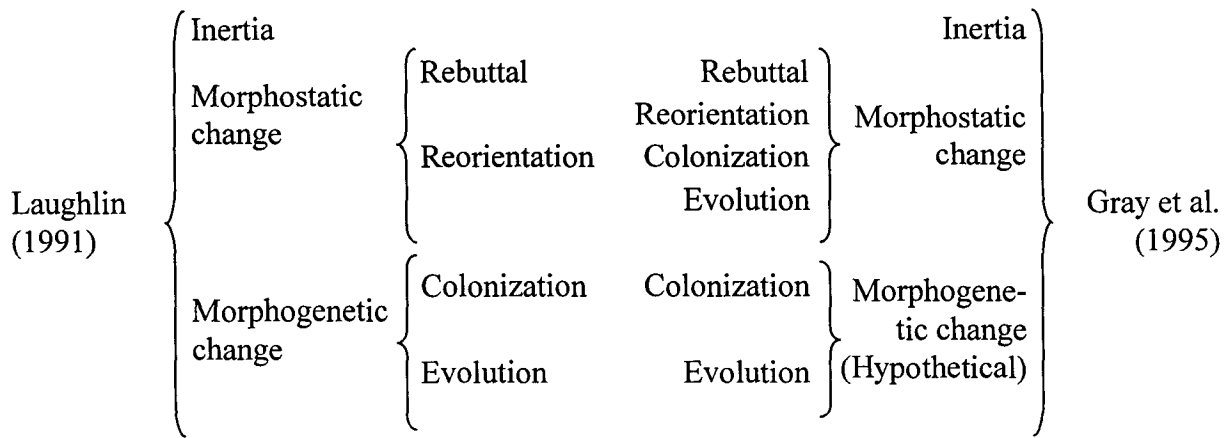


Figure two: Classification of companies selected for interviews.

