Social Movements as Actor-Networks: Prospects for a Symmetrical Approach to Doñana's Environmentalist Protests

Los movimientos sociales como actor-redes: Perspectivas para un enfoque simétrico a las protestas ecologistas de Doñana

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Abstract: Conceptualizing and understanding forms of collective action has historically been one of the primary preoccupations of social thought. In this context, I propose that the conceptual and methodological baggage that goes with Actor-Network theory (ANT) can be transformed into a fundamental resource for renewing and enriching the analysis of collective action. To achieve this, I focus on two main contributions of ANT to social thought: i) its alternative understanding of social action and ii) its alternative definition of the "collective". Both contributions, I will affirm, allow the opening up of an interesting discussion about the possibility of articulating a non-dichotomic theory of collective action that differs from the dominant traditions in that it takes into account and incorporates the materially heterogeneous and relational character of social movements. To give an example of the fertility of this approach I will focus on an analysis of the actions and reactions of environmentalist groups during the Doñana's ecological disaster (1998-2002), in Spain.

Key words: social movements, dichotomism, environmentalism, Actor-Network Theory, Science and Technology Studies, ecological crisis.

Resumen: Conceptualizar y comprender las formas de acción colectiva ha sido históricamente una de las preocupaciones del pensamiento social. En este contexto, propongo que el bagaje conceptual y metodológico desarrollado por la denominada Teoría del Actor Red puede ser una herramienta fundamental para enriquecer y renovar el análisis de la acción colectiva. Para ello, me centraré en dos de las contribuciones principales de este enfoque: i) su comprensión alternativa de la acción social y ii) su definición alternativa del "colectivo". Ambas contribuciones, afirmaré, permiten abrir una interesante discusión sobre la posibilidad misma de articular una teoría no dicotómica de la acción colectiva que difiera de las traiciones dominantes y que tenga en cuenta el carácter materialmente heterogéneo y relacional de los movimientos sociales. Para ilustrar la fertilidad de este enfoque me centraré en el análisis de las acciones y reacciones que desplegaron los grupos ecologistas durante el Desastre Ecológico de Doñana (1998-2002), en España.

Palabras clave: movimientos sociales, dicotomismo, ambientalismo, Teoría del Actor Red, crisis ecológicas.

Introduction[1]

While it may be true that conceptualizing and understanding collective action has been one of the classic concerns of social thought, it has also been one of its recurring headaches. This can be seen in the long list of disputes and controversies that constantly cut across the history of the study of these phenomena. Actually, the very notion of "social movement" is, as all we know, quite polemic[2]. Although it initially appears to be a category that can be identified with the workers' movement, its historic and analytical development shows that we are dealing with a malleable, multi-faceted and particularly contested term (Melucci, 1996; Mendiola, 2003). A term that describes and designates very different realities, sometimes pursuing and defining seemingly opposed phenomena and situations (Tilly, 2004; Diani, 1992; Diani and Eyerman, 1992; Della Porta and Diani, 1999). That could be the reason why, as many authors have pointed out, most of the debates and arguments about these phenomena have taken refuge in a conceptual matrix full of tensions, polarizations and constant differentiations (Giddens, 1984; Klandermans, 1997; Melucci, 1992; Crossley, 2002).

The result of this difficulty, I will submit, is that research on these phenomena has been limited by the effects of a strong and deep

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2 Speaking of 'collective action' is not easy in the social sciences. Not only because doing so reveals the vagueness surrounding the definition of this term throughout history, but also because in practice there is evidence that different terms have been used to describe the same phenomenon and, at the same time, the same term to refer to different phenomena. Thus, and despite many attempts to define and delimit the semantic boundaries of the main concepts in this field, it is easy to find contradictions, synonyms and ambiguities between concepts such as "collective behavior", "collective action", "protest" and "social movements" (Melucci, 1996). However, and in pursuit of conceptual clarity, I will use the concept of "collective action" to refer to what is continuing and heterogeneous, to forms and actions of protest that are relatively organized and planned and which move from being the protest of a particular social group to forms of large-scale or mass mobilization. In this context, "social movements" are considered a particular phenomenon of collective action that is characterized by their non-institutional character, that are developed mainly in areas of conflict, that are geared to social and political change through protest repertoires and building informal networks of interaction that foster the creation of ties, solidarity and collective forms of identification (Della Porta and Diani, 1999: 16).

dichotomization of the unity of analysis. Driven by the same zeal, we have seen a number of theories try to work out, categorize, absorb or extract the essential and defining features of these phenomena. Additionally, the difficulty of finding or discovering the longed-for fundamental gnomic structure has resulted in a proliferation of debates and theories structured around extremely polarized premises and tensions (Diani and McAdam, 2003). Over time, moreover, many of these debates have come to focus on what constitutes true founding premises, inalienable for any new approach. Consequently, the dominant theorizing around these phenomena has often been organized around a relatively limited set of discussions, premises, dualities and variables that have also often been naturalized with virtually no discussion (Melucci *et al.* 1989 ; Rule, 1989; Rucht 1991, Tilly *et al.* 2007). Given this context, there is a danger that conceptualising collective action ends up being quite a technical task, basically involving perfecting minor aspects or refining and improving the operational aspects of certain concepts that are considered of central importance but acritically accepted.

In this sense, the main purpose of this paper is neither to dismiss social movement theory nor to build up a new and definitive theory. Rather, my aim is to explore the relevance of the work done in Science and Technology Studies, and more concretely what has been called Actor-Network Theory, to enrich and invigorate, our understanding of those social phenomena recognized in popular and academic discourses as social movements. Inspired by the environmental mobilisations that sprung up around the Doñana's Ecological Disaster, one the most serious environmental controversies in the recent history of Spain, I will analyse the principal implications of importing the theoretical and methodological postulates of what is known as the "symmetric turn" to the study of forms of protest. In this sense, I am going to argue that collective action should be understood in terms of 'actor-networks'. As we will see, this strategy will allow me to open up an interesting discussion around the possibility of articulating a non-dicothomic theory of collective action that, unlike the dominant traditions, includes and assumes the absolutely heterogeneous and relational nature of social movements and thus accepts that these forms of collective action are the emergent effect and interactive result of "hybrid collectives".

Collective action: a problem at a frontier land

As I was arguing, most of the explanations of the multiple empirical phenomena that have entered the study of collective action and social

movements (from panic to political contestation, from spontaneous protests to revolutions) have traditionally fluctuated (either taking sides or trying to find points of equilibrium) between a narrow set of tensions and binary pairs that have structured the way these phenomena have been explained. For instance: what explains the emergence or irruption of a collective action? Usually, the discussions opened up by questions like this have been historically based on a series of binary pairs: Should the emphasis be on the social tensions or on decoding the individual traits, attitudes and orientations of the actors involved? Should the emphasis be on the subjective aspects or on the objective conditions? Should we see it as a rational form of behaviour or irrational, deviant forms? Should we see it as a symbolic challenge or as a consequence of bringing a series of arguments, resources and means for mobilisation into play? The list is long. Almost without exception, when we delve into the history of the way these phenomena have been conceptualised, we become aware that in one way or another all these explanations revolve around a set of discussions, variables, tensions and premises that seem fixed, unmovable. And the oddest thing is that, through the endless discussion of theses issues, many of these tensions and differentiations have come to be accepted as essential, as inevitable starting points for all following approaches.

And it is not an easy task to escape from this polarised and dichotomic dynamic of conceptualisation. We can see one example of this in the 'synthetic' or 'eclectic' approaches. Starting in the 1990s, many of the most prestigious theorists began a process of review and synthesis that aimed to put a stop to so much controversy. Ignoring ideological, partisan and territorial disputes, these theorists embarked on a process of integration and bridge-building that promised an improved understanding of these realities (Klandermans *et al.* 1988; Diani and Eyerman, 1992; McAdam, McCarthy and Zald, 1996). Framing processes, political opportunities, opportunities for mobilisation... we do not necessarily have to see these variables as conflicting elements. On the contrary, they should be integrated into a single analysis (Della Porta and Diani, 1999; Diani, 1992; Kriesi, 1995; Kitschelt, 1991). But in spite of the high expectations, many of these eclectic attempts did not manage to come up with a completely productive redefinition of the object of study in question. Indeed, rather than going away, many of these historic difficulties remain today. Thus, for example, the difficulty in finding a clear answer to the question of the origin and development of a social movement remains. The same is true as regards the crucial question of participation and enrolment in these phenomena. And the same can also be said about a plausible theory of action and agency of and within the movements (Della Porta and Diani, 1999; Buechler, 2000).

And what's more, rather than resolving existing disputes, in many cases these eclectic approaches fuelled new controversies (Buechler, 2000; Laraña, 1999; Crossley, 2002). As suggested by Diani and McAdam (2003), this same dynamic combination of distinct analytical frameworks could be behind the emergence of some of the new questions, problems or uncertainties facing contemporary theorizing around these phenomena. For example, when attempting to explain its relationship between the actor and their context, whether immediate or more distant, it becomes difficult to explain, from the eclecticism, what is the meaning of the interaction and whether there are different levels of interaction or different contexts in relation to the same movement. A similar controversy arises from the difficult relationship between individuals and collectives (Klandermans, 1997). Or when an attempt is made to reconcile the more macro level and the micro level in a "meso" level of action in which the action of the movements supposedly takes place (McAdam, McCarthy and Zald, 1988: 729). In this context, as I stated before, the difficulty of putting aside the dichotomous legacy increases the risk that the conceptualisation of collective action ends up being quite a technical task, basically involving the perfection of minor aspects or refining and improving the operational aspects of certain concepts and premises that are considered of central importance and acritically accepted.

Albeit with some exceptions, something similar can be said about other contemporary approaches, even about those that are more daring and challenging with respect to their understanding of this historical background. This is the case in the writings of Alberto Melucci (1989, 1992, 1996). Although he is a key figure in understanding the theory behind contemporary social movements, his critique of the premises that presided, and largely continue to preside, over theoretical and empirical research in this field is, however, a little bit disappointing. Indeed, whilst he highlights the fact that "*in no other area of sociology is the weight of the dualistic tradition inherited from nineteenth century so incongruous with the object of study*" (Melucci, 1992: 239), his attempt to overcome the uncomfortable distinction between the objective and subjective conditions, or between the structural or actorial conditions, is unable to avoid some important problems. In this sense, his epistemological turn (although crucial to his promotion of a more relational approach) aims to turn collective action into what should be explained instead of what should be supposed, thus attempting to avoid some of the widespread problems linked to the reification of the unity of analysis. However, this turn ultimately ends up reproducing some of those dominant disputes that he is trying to circumvent. For instance, his empirical emphasis

of conflicts, whereby solidarity networks are structured into different levels within a complex and highly differentiated social system, implicitly leads us to maintain (and fall back into) a dualism that distinguishes between macro and micro (Lockie, 2004). And we can say the same about the involuntary reiteration of the individual/social distinction that his reasoning on the collective character of social action entails, or the recovery of the separation between more objective and subjective competencies and domains, when we tackle the question as to the participation of technological artefacts in the construction of the aforementioned "collective identity".

So, although it seems evident that there exists a terrain to be explored that lies between actors and systems, actors and networks (Castells 1996; Escobar, 2000; Juris, 2008), individuals and collectives, the macro and the micro, what is certain is that traditionally the task of reconciliating and synthesising these distinctions, or moving beyond them is by all accounts complicated. Perhaps, as noted by Benton (1995), this is because these divides go very deep; they are not superficial and cannot be removed easily while leaving everything else intact.

From laboratories to actor-networks: the symmetrical approach of Actor-Network Theory

But it is not the intention of this article either to dismiss social movement theory or to build up a new theory of social movements. Rather, it is to explore the relevance of the work done in Science and Technology Studies (STS), and, more concretely, what's been called Actor-network Theory (ANT), to our understanding of those social phenomena. While ANT does not represent the only sociological attempt to challenge conventional sociology, its particular relevance here derives from its explicit attempt to challenge dualisms within social sciences. And that is precisely what I would like to take as my starting point.

Actor-Network Theory has its roots in the field of Science and Technology Studies, but, as it is well-known, makes contributions over a much wider area. Combining the insights of poststructuralism with robust empirical studies (Law and Hassard, 1999), this approach has helped over recent decades to set new intellectual agendas not only in sociology and technoscience studies but also in anthropology, economics, geography, philosophy and organisation studies (Callon and Latour, 1981; Knorr-Cetina, 1981). In this sense, many (but not all) would agree that ANT has come to offer a highly interesting and fertile theoretical contribution to many areas, probably one of the most

useful and systematic in recent times (Callon and Law, 1997; Latour, 2005). But in order to understand why its contribution can be important to social movement theory, I would like to go over one of the main points of this sociological approach: the principle of generalised symmetry (Callon, 1986).

In the 1970s, tired of what they saw as the excessive weight given to 'social' aspects in accounts of scientific activities, the originators of this theory decided to begin practicing a different explanatory style. More agnostic, they called it. A style that does not side with certain fundamental elements, as traditional approaches did. Indeed, inspired by one of the principles put forward by David Bloor in his Strong Program (1976), early ANT theorists suggested the need to generalize the demand for symmetry and do away with the privilege given to 'sociological explanations' in accounts of scientific activity (Callon, 1986; Callon and Law, 1982). If you walk into a science laboratory, what Woolgar and Latour called 'laboratory life' (1979) or 'science in action' (1987), and observe what goes on there as an ethnographer would observe the peoples and communities that live in the plains of Kenya (Strum and Latour, 1987), you see that 'society' does not resolve, explain, shape and give meaning to everything that goes on in these spaces where science is constructed. On the contrary, these ethnographies show us that scientists use a wide variety of means to bring nature 'into being' in the laboratory. The means include: technological instruments, such as 'inscription devices' (Latour and Woolgar, 1979); literary techniques of persuasion, used for instance in scientific papers (Latour, 1987); and political strategies (Knorr-Cetina, 1981). So, it is impossible to understand and give meaning to this activity without appealing to these 'other' elements, many of which appear to be 'non-social' (Latour, 1994). Thus, it makes no sense to put into practice a style of explanation that starts by siding with a series of elements, variables and domains that are considered more important than others *per se*. It makes no sense to make a distinction between causes and consequences a priori. Practice shows that scientific activity is inseparable from a complex process of 'heterogeneous engineering' that orders and aligns very different entities and practices in a single assemblage (Law, 1987).

This, they argue, means that nature and society have to be described in the same terms. It does not make sense to perpetuate an explanation of scientific activity that is 'constructivist for nature' and 'realist for society' (Latour, 2000). But as well as questioning this asymmetry, the idea of generalising the principle of symmetry ultimately raises the need to do away with all forms of dualism (Callon, 1986). For instance, ANT's focus on a radical relationality implies that there is no change of scale in the social domain between the

micro/actor and the macro/structural (Latour, 1999a). In fact, in accordance with this principle, no distinction is valid *a priori*. Everything we study should be seen as the result of complex processes of production, relational structures and heterogeneous amalgams (Latour, 2005).

There are therefore no pre-established entities, no inherent, clearly differentiated conditions. Nothing is self-evident and there is nothing that does not need to be explained (Callon and Law, 1995). It tells us that, rather than continuing to use the different extremes as a starting point, we should step back, forget our prejudices, and explore the relational density that is reflected in practice and that is the result of the totally heterogeneous amalgams of actors that are also networks – hence the name of the theory (Law and Hassard, 1999). Networks, because they comprise very different elements; and actors because they incorporate activity and action. However, they cannot be reduced to either of the two (Callon 1987:93). Hence, analytically, the actor-network describes the product (and process) of compromises and relational effects of a network that brings together and combines other entities (that are always heterogeneous). It refers to the complex web of *actants*[3], entities, interests, objects, different humans and/or materials that are related and involved in and for social action (Latour, 1994).

Details aside, the appliance of the principle of generalised symmetry gradually allowed ANT to develop into a sociologically innovative model, a critical and profoundly non-dualist approach (Murdoch, 1997), what Latour would name a non-modern approach (1993), contrary to any form of essentialism and strongly opposed to the long history of "social essentialism", which historically explains the emergence and growth of the social sciences as the sciences of "the social" (Law, 1994: Domènech and Tirado, 1998). And that is precisely the reason why I contend that this approach can let a breath of fresh air into social movement theory. As some authors recently pointed out, social movement theorists have always been firmly rooted in one of the most basic foundations of sociology: that 'social facts' should always be explained by other 'social facts' (Lockie, 2004). So, according to this argument, we can propose that the problems that cut across the study of collective action should be related to an "asymmetrical" dynamic of conceptualisation, to an essentialist and modernist modus operandi where each definition would be an attempt to gather, categorize, extract and differentiate the most essential and defining features of these phenomena.

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3 Instead of using the traditional notion of actor, so much anthropomorphic, ANT prefers to talk about actants. This notion names whatever acts or shifts actions, without attributing any essential characteristic to any entity (Latour, 2005).

Therefore, we could rightly hypothesize that only by critically reviewing this asymmetrical legacy, (just as ANT does in other fields of social thought) will we be able to avoid those problems that constantly crop up over and over again in social movement theory.

But before exploring in depth the potential consequences of importing this "symmetrical" or "non modern" framework into the study of forms of protest, I would like to present the case study that will help us to test the validity of this line of reasoning.

The Doñana's Environmental Disaster

On April 25, 1998, more than forty meters of the retaining wall of a lagoon in the Aznalcóllar mine, used for pyrite tailings deposits (residue from the mine*),* collapsed. This wall was owned by the Canadian-Swedish Company Boliden Limited. The Agrio and Guadiamar rivers were immediately flooded with two billion litres of tailings with a high metal content and an additional four billion litres of acid water containing dissolved heavy metals. Spain was about to witness one of the most devastating ecological crises in the country's history.

The spill affected a branch of the Guadiamar river basin measuring 62 kilometres long and between 500 and 1000 meters wide. It stretched from Aznalcóllar to the final branch of the Entremuros marsh, bordering the Doñana National Park, one of the most protected and valuable natural sites in southern Europe, not just because it is a critical area of hibernation for over six million migratory birds, but also because it hosts some of the most protected ecosystems and species on the planet, such as the lynx and imperial eagle (it was not without reason that the Park was declared a Biosphere Reserve in 1980 and a World Heritage site in 1994). Environmental disaster in Doñana! Environmental catastrophe! Massive environmental catastrophe in Europe! Natural heritage devastated! In all the news reports, the Aznalcóllar disaster was identified as one of the top 10 natural and anthropogenic environmental disasters in the world, not just because of the largest ever spillage of sludge ever recorded, but also because it happened close to a residential zone and because the spill travelled a distance of around 40 km., destroying the flora, fauna, enormous expanses of cultivated agricultural fields and river fishing areas (Aparicio *et al.* 1998).

Figures aside, one of the interesting things about the case is that the collapse of the dam triggered a massive controversy, an ongoing polemic that involved many people and put very different sectors and social actors

up against each other: environmentalists, administrations, scientists, local residents, farmers, etc. They all turned up at the scene of the disaster, alerted and mobilised by an unprecedented event! The affected area contained natural sites, zones of regional protection, private estates, fruit and vegetable production, mining industries, etc. So, there were many actors, institutions and interests that were affected by the event: the Junta de Andalucía, the Autonomous Regional Government; the Environment Ministry; the Higher Council for Scientific Research (CSIC), responsible for the Integrated Biological Reserve that the Park hosted, as well as the European Union, which was responsible for the Protection Zone for Birds[4] (ZEPA). For this reason, there was immediately an issue of competencies, responsibilities and political action. Who was responsible for safety in the mine? Who, for taking care of the Park? What to do? How to clean this up? The controversy was opened up.

And this is exactly where the interest lies in using a case study like this. As STS has shown, controversies are privileged scenarios for testing more "symmetrical" perspectives (Callon, 1986; Brante *et al.* 1993; Nelkin, 1994). In controversies, everything is negotiated and everything depends on distributions and practices, on definitions and actions that take place in order to reduce the uncertainty and order the confusion that surrounds those episodes (Callon *et al.* 2001). So, unlike situations that deal with more stable objects of study, these scenarios make the way things become fixed or evaporate more traceable. This, therefore, requires the practice of a more agnostic and relational perspective.

I obviously do not have sufficient space in this article to delve deeper into the entire extent of the controversy, but, following ANT, I will instead focus my attention on a combination of very concrete actions and reactions, which, with hindsight, would also become very important to redefine the political content of the controversy and that will be also very important to illustrate the potential of this critical approach to enrich collective action theory. I am referring to the mobilisation and protest actions that were undertaken by so-called "environmentalist movements" and that involved the birds that nest in the Park.

The environmentalists' mobilizations

An intense controversy was opened up after the collapse of the dam. Consequently, two main currents of opinion, two competing definitions

4 361 bird species are recorded in Doñana (De Lucio, 1997).

of what had happened, started to become visible. On the one hand, the "*nothing happened*" of the administrations, caught up in a dialectic dispute and interested in "*immediately re-establishing*" the activities and "*normality*" in the area. On the other hand, the "*the worst is yet to come*" that was voiced mainly by environmental organizations that were interested in showing the "*real*" reach of what had happened and in "*demanding*" responsibility from administrations and from the company who owned the dam (Álvarez Cobelas, 1998). While the latter would be accused of being "*alarmists*", of "*preferring ducks to people*", the former were accused of being "*negligent*" and "*irresponsible*" (Greenpeace, 2000; WWF, 2004).

But what is important to highlight is that since the very beginning the environmentalist groups emerged with strength in this polemic. Mobilised in the very location of the accident from the beginning, they quickly spread out around the Park, took their own measures and started cleaning the sludge on their own account. Their discourse and actions quickly appeared as a clear counterpoint to the versions offered by political and scientific institutions in charge of managing the situation. Greenpeace, WWF/ADENA, the Coordinadora de Organizaciones de Defensa Ambiental (CODA), SEO/Birdlife, AEDENAT and CEPA (Coordinadora de Ecologistas y Pacifistas de Andalucía, a pacifist and environmentalist network) were some of the organisations that actively participated in this mobilisation.

At this point it is important to make clear a methodological clarification. Obviously, there are many ways in which this 'environmentalism' can be defined (see Jamison, 2001; Brown and Masterson-Allen, 1994; Maarten, 1995; Szasz, 1994 or Yearley, 1996). However, in this situation, rather than using a pre-existing definition of what social movements are, or what we can consider an "environmentalist group" to be, I prefer to show, following ANT's agnostic empiricism recommendation, the way in which these "actors" emerged and created different forms of association so as to resist the attempts at localising the disaster and to redefine the content of the political controversy ignited after the spill (Latour, 2004). In this sense, rather than starting from premises, definitions or variables that are traditionally employed in the analysis of collective action, I will focus agnostically on the relational process through which a specific collective turns into a collective, regardless of the number and nature of the entities involved (Lockie, 2004; Mendiola, 2003; Sheller, 2001). That is, I will only look at the huge effort that these actors made in settling their version of what occurred in space and time.

In this sense, if we focus on the actions of environmentalist groups to redefine the content of the controversy, we realise that their major concern

was to calculate the "real" magnitude of the disaster. For them it was clear that the contamination affected the heart of the Doñana's National Park. If this was true, the disaster would most likely be of a far greater magnitude than official administrations were willing to admit. But those concerns were not just hot air, they were accompanied by sophisticated analyses and experiments and sought the support of independent scientists, university bodies, cutting-edge laboratories... For example, some groups began to take samples of the spill and collect dead fish (Greenpeace, 2000). Others initiated legal action to find out who was responsible for the breaking of the dam (Aparicio 1998). Others took on responsibility for the most urgent tasks of cleaning up the spill (see Aparicio et al. 1998). Through actions at ground level, different groups began to weave a complex set of alliances and counter-alliances among themselves and in relation to the various 'active' actors in the zone, mostly locals and scientists and the technicians and engineers sent by the administrations themselves.

Although their main concern was the possible contamination of the Park, through their actions they pretended to make clear that they were only interested in preserving this natural and scenic area. They also wanted to problematise in a more general and fundamental way the difficult relationship between society and nature, between science and politics that the event, from their point of view, had brought to light. How could it have been that an outdoor reservoir, full of presumably highly toxic heavy metals, was in such close proximity to one of the most important natural parks in Europe? Had all necessary measures been taken to prevent such a disaster? How was the cleaning up of the spill being undertaken? Who was supervising it? To what end? Was anyone paying attention to the complex relationships that connect the various ecosystems that existed in the area? For environmentalists the answer was clearly no. While the authorities had deployed a wide range of resources, including heavy machinery, detachments of the Spanish army, and a team of scientists and experts to take charge of cleaning and technical decision-making, the environmentalists believed that things were being 'done badly'. Clearly so, because not only was there a lack of coordination between the various administrations, but very little information was coming out about what was really was happening "inside" the affected area. One of the main culprits for this lack of information, other than the government administrations, was the CSIC, the scientific body charged with "technically" arbitrating and certifying what had happened[5].

5 To look through all the scientific reports made public by the Consejo Superior de Investigaciones Científicas (CSIC), the institution in charge of the scientific monitoring of

In their view, the CSIC was doing little to find out what were the real consequences of what had happened. They were not only basing their results on samples taken from less polluted parts of the river, but furthermore this analysis was based on criteria and dimensions that were rather too partial or superficial:

> The idea of legal pollution does not exist. In other words, anything that is not covered by legislation is left out. For example, samples were taken in order to test for heavy metals in water, but we know nothing of how they are distributed and accumulated in the food chains, we know nothing of how they are soaked up by the ground, we do not know if they have already begun to affect those who removed the sludge. Yet, the otherwise limited knowledge of natural processes that we do have suggests that all these processes and many others are taking place right now (Álvarez Cobelas, 1998).

So, for environmentalists it was clear. Field research needed to be carried out. For this purpose they mobilized volunteers, recruited reporters, neighbours and farmers, politicians... They sent samples to international accredited laboratories... Ultimately, they put into place a coordinated action that would involve and bring together many different actors; humans, of course, but also non-humans. Indeed, this would be one of the main characteristics of the protest that sprung up in Doñana.

Environmentalists considered that it was not only important to have support from other stakeholders with awareness of what had happened, but also to involve other elements and entities that have been overlooked. For example, they were concerned about potential impacts of the spill on the aquifers, which are key in the complex underground water cycle that connects the interior and exterior of the Park. Or they also alerted about the potential impact of contamination on the food chain. Thus, elements normally left unconsidered or that until then had been treated in terms of isolated species or singular systems become relevant to articulate the protest. The "environment" gradually ceased to be a passive entity upon which to impose will and human actions, or dynamics and social conflicts, and instead became an important and inseparable actor which we co-evolve.

But perhaps it was issue of the birds that best reflects this complex and heterogeneous pattern that slowly became an organized protest. In effect, since the spill occurred, environmentalists focussed a large part of their claims into showing the reach of the catastrophe by using a detailed study of the birds' movements as a starting point. ADENA was the first organization to raise its voice in alarm in this sense:

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the accident, see: http://www.csic.es/hispano/coto/aznalco.html

> Between northern shovelers, geese, mallards and coots, the birds that have doses of poison in their organism are estimated at a figure of 19,900 (García-Novo, 1998: 20).

SEO/Birdlife, another particularly active organization, did not take long to react and also ordered a detailed longitudinal study of the condition of the birds. It asked for their flight paths to be monitored, specifying precisely whether or not they had been poisoned and, consequently, if they were spreading the contamination through their movement. For all of them, It was not just a matter of the danger that the contamination meant for the bird colonies that nest in the Park and its vicinity, but also the risk that this contamination could entail for other species living alongside the birds.

> We cannot overlook that the environmental impact is not local, because the populations of migratory birds from Africa as well as from the Arctic will surely find their graves in this place, which has also affected the ecosystems of nature reserves all over the Earth, as they will lose these bird populations, altering all biocenosis (Álvarez Cobelas, 1998).

However, the administrations and the CISC scientists did not appear to share the same degree of concern over the possible diseases of birds. For the former the most important thing was to quickly clean up the sludge, remove it and recover the area completely. For the latter, the bird's condition was certainly not lethal. If certain zones that serve as drinking sites were dried out and if the movement of certain birds was restricted, the matter would not take on any further importance. But the huge effort of the environmental movements seemed to work when, one year after the accident, it become publicly accepted that hundreds, if not thousands of birds were seriously contaminated. As they reported, up to 40% of geese coming from Scandinavia, Holland and the north of Germany that stop in Doñana during their winter trip towards Africa contained some heavy metals (mainly arsenic). Two months later, CSIC confirmed the findings (1999). From this moment on, the movement of these birds became a central, strategic, element for the environmentalists. Not just because the birds generated important data and information, but because, they also displaced the controversy, bringing concerns about the river and sludge to bear on the air and flight paths of the birds.

Actually, the appearance of birds in the dispute changed the character of the controversy. As the environmental groups began to show in their public appearances, the catastrophe was no longer something that could be easily localized, reduced to the black earth stained by the sludge. The disaster had a far more global reach. Indeed, far from being something manageable through simple heavy machinery, the future of the area and, by extension,

that of other areas in contact with the birds, was uncertain and worrying. Through the air, through the food chain, the contamination spread out and jeopardized us in a complete and indivisible manner:

> A sample specimen? The commonplace understanding of the marshland as a refuge for migratory birds that, when they travel to Africa or the north of Europe, will take the poison along with them (Álvarez Cobelas, 1998).

In this context, it is worth noting that all this work would not have been possible without using specific technological devices. Indeed, the articulation between environmentalists and birds was possible thanks to the action of a very concrete technique: ringing. This is a well-known scientific monitoring and data collection method that enables the tracing of flight paths of migratory birds and hence to follow the development of different species and colonies. In Doñana this recording work involved the participation of scientific bodies, universities, wildlife preservation organizations, volunteers from different countries, etc. Thus, the act of ringing the birds brought together the action of a myriad of very different bodies, entities and actors. This way, through ringing, environmentalists ensured a constant monitoring of the accident, of its global and deferred effects. Further, it allowed environmentalists to "fly with the birds". That is, through this procedure, environmentalists united and breached the limits between signs and things, between humans and non-humans, and established bonds and regimes of interdependence between them.

Consequently, a novelty was brought into the controversy. For instance, as the flight of migratory birds erased all geographical and administrative distinctions, environmentalists changed their strategy and began to use this debate to reactivate contacts with activists and scientific organisations from throughout Europe: either sharing resources, means or countless volunteers; or using this debate to rethink many other issues related with their political ecology: food chain, public health, ecosystems and governments, natural processes and economic interests, the birds' flight route maps told us of a social-natural sphere that does not understand geographical boundaries, nor ontological distinctions.

Social movements as actor-networks

So, the birds in this context are a lot more than just a mere resource, much more than an intermediary at the service of environmentalist interests; like previously the river or the food chain they are something beyond entities

that lack agency and are irrelevant for social analysis (Latour, 1999a). As we see, they take part in the shaping of a given order. They bring together what is dispersed, they unite relations, and they enable the coordination of practices. They secure relations. Ambivalent in their directions and effects, the birds connect what is internal and external to the Park into a spiral that erases the distinctions that administrations strive to maintain through the activity of the diggers and containment dikes. Actually, that's why I state the birds are mediators. The term mediator, as Latour argues (1999a), unlike that of intermediary, refers to an event or actor that cannot be defined through its 'input' and 'output'. Although an intermediary is entirely defined by what causes it, a mediator always goes beyond its own condition, that is, it is neither a cause nor a consequence, nor completely a medium nor entirely a goal or purpose. In this sense, the birds are mediators because, through ringing, they help environmentalists to denounce what is happening beyond Spain's border. [6]

Then, thanks to this procedure it becomes possible to articulate the protest with contexts, actors, or macro-actors such as the European Union, that were previously detached from the event. And it is through ringing that the birds themselves also change, passing from being simple "animals to protect", "innocent victims of the accident", to becoming "part" of the catastrophe, to being "the catastrophe itself", or even to being "activists" of a movement that knocked on the doors of international bodies responsible for the preservation and protection of nature. So, it is through this kind of "delegation" (Latour 1999a), that subjects and objects, humans and non-humans, switch their positions, blend their roles and create new "collectives", new times and spaces, new identities and frames within the controversy.

Actually, it is this sequence of entangled actions, this chain of localized practices that '*sum up*' and 'order', or "*frame*", interactions across space and time, that allows us to understand how political action grows longer in Doñana, and how a particular "actor" takes shape (i.e. how the environmentalists manage to extend their tentacles, mutate and become global). In this sense, it is a sort of "hybrid collective" (Callon and Law, 1995) who finally 'activates', mobilises, or performs a specified view of what happened (Rabeharisoa and Callon, 1999). Indeed, it is the ability of this "hybrid collective" (composed of humans and non-humans like birds or aquifers) itself to achieve and

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6 For instance, monitoring the birds was to constitute the scientific basis to call for the European Union's intervention and demand responsibilities, as part of Doñana is a World Bird Reserve (WWF, 2004).

ensure that certain entities "aggregate" or "order" other entities, that leads us to understand how this actor gives coherence to its action. How an apparently insignificant network of actors or entities, form a not particularly large "localization", manages to control and "be a spokesperson" for a large number of actors.

Then, based on my reading of the events, although it may appear to be an actor, whose act is actually a relational and completely heterogeneous network acting as an empirically inseparable unit. Or to put it in other words, we could justifiably say that we are looking at an assemblage that is similar to the "actor-networks" that ANT tells us about, it is a network because it designates the result, the instantiation of an assemblage of practices, actions and interactions between various, heterogeneous entities. But it is also an actor because we see that this network mobilises the world, reorders it and executes it in a particular way.

Actually, as the controversy allows me to see, it is the very need to define the relationship between society and nature after the spill what leads a particular network of actions and actors to perform a protest, to perform a particular conflict, to give life to a specific collective action. In this sense, it is worth noting that each combination of operations, each new enrolment, transforms or may transform the "actor" but also the "context". Its coherence, then, comes neither from the actor nor from the context. Actors and contexts are only identifiable *a posteriori*, as effects, either precarious or not, of these constant interactions or "translations" (Mendiola, 2003; Sheller, 2001). This is an important result of my analysis. Basically, because it shows that this collective action does not represent a pre-existing group. It cannot be simplified or explained as a mobilisation of resources, or as the expression of an identity that existed in advanced. It cannot be reduced to pre-existing social factors, structures or systems. It cannot be either understood as the expression of an actor nor as the reflection of a structure, or as an underlying potential for conflict that is stimulated or spurred on by a particular offence or situation. None of the usual narratives can adequately account for the actions that developed around the controversy. Rather, we are looking at a singular assemblage of very different and completely heterogeneous elements or entities. An actor-network, or something like it, is that which remains between actors and networks. In other words, it is something irreducible to the condition of being an actor and yet neither is it a network. As such, only the wide range actions carried out and taken together as a bundle explain what is happening, how conflicts are framed, how identities are shaped and how agency is distributed or clarified.

At this point, it is important to note that I am not saying that environmentalists in Doñana are "an actor-network", as if this was a particular kind of actor (Escobar, 2000). I am actually claiming the opposite: I end up calling a specific actor-network "environmentalism", basically as a way of characterising a network that is active and profoundly heterogeneous, and therefore difficult to simplify and represent. Going a bit deeper, we could say that rather than seeing the "social movement" as a "Centre of calculation" (Purdue, 2000; Diani and MacAdam, 2003; Castells, 1997) that successfully coordinates and manages a series of networked organisations, resources and materials, we actually have a series of operators (both human and non human) that create a network and relate to each other, and that, through their interaction, perform a movement. A collective action.

Concluding remarks

So, as emerges from my analysis, this relational-materialist conceptualization of the social that ANT promotes directly rejects a number of the analytical concepts used in contemporary social movement theory, especially those related to structural preconditions for action or to disembodied notions of collective subjects (Lockie, 2004). Theoretically and methodologically, it raises the need to deal with "hybrid collectives", to take an analytical stance to amalgams. So much so, that this is not possible if we continue to draw on the same "black boxes" traditionally referred to when discussing these social phenomena. In this sense, the concept of actor-network can be very useful because it describes analytically the process and product of relational commitments of a network that gathers and combines heterogeneous entities.

Furthermore, the usefulness of applying this concept to a field such as social movements lies especially in its ability to redefine symmetrically (and not deepen as some have argued) both sides of an old debate, the one that faces actors and structures, micro and macro, objects and subjects, actors and contexts, nature and society from the point of view least explored: that of the hyphen (Latour, 1999b).

In effect, if we momentarily omit the equivocations that talking of "actors" and "networks" can lead us into, and we pay attention to the operations and practices involved in the production of an actor-network -one of *framing* and one of *summing up* (Latour, 1999b)-, the argument opens out a new and interesting potential for the analysis of these phenomena. Instead

of striving to overcome or resolve this actor/network tension, or any other tension (something that as I showed leads us to alternate eternally between nature and society, agencies and structures, between macro and micro levels, identities or contexts) the actor-network concept suggests that we actually do the opposite: that is, put ourselves in-between, or similarly, turn the dichotomy, any dichotomy, into a controversy, into an theoretical artefact, into the result of attempting to capture a complex, multiple chain of actions. That is, to turn unmovable, antagonistic starting points into two sides of the same coin: that of the trajectory that describes a unique "circulating" entity, the "actor-network" (Latour, 1999b).

Hence, in this new scheme, actor and network, agency and structure, macro and micro, nature and society, only designate two sides of the same phenomenon. The locus of analysis is always simultaneously frame and juxtaposition. Actor-network, without ever forgetting the hyphen, because this is where the very success and productivity of the concept lies, of course, this does not mean that we have to push all the variables traditionally used to explain these phenomena into the background. Rather, it emphasizes that these dimensions should no longer be considered preconditions for mobilization; dilemmas that force us to decide, to take a position. Rather, they should be redefined from a symmetrical point of view. That is, they should be considered results, effects, generative consequences of these heterogeneous networks of action and interaction that the practice performs.

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