EXPERIMENTATION AND BRICOLAGE ON INSTITUTIONS: UNDERSTANDING THE SELECTION OF NEW ARRANGEMENTS

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Abstract

This paper examines how innovative institutional arrangements are generated during processes of institutional *bricolage*. The aim of the paper is to highlight how an arrangement is selected among the others when many alternative exist or are imaginable. To address this question, we present a qualitative study of institutional *bricolage* in the context of the making of the European carbon market. We suggest that, during episodes of experimental *bricolage*, alternative arrangements may be tested and evaluated inside experimental spaces named platforms. We identify three selection mechanisms of innovative arrangements at play inside such platforms: ***tacit compromise, natural selection*** and ***negotiation***.

Keywords: Institutional theory, innovation, bricolage

EXPERIMENTATION AND *BRICOLAGE* ON INSTITUTIONS: UNDERSTANDING THE SELECTION OF NEW ARRANGEMENTS

Recently, neo-institutional theory has been developing an original view on innovation processes as *bricolage* (Boxenbaum and Rouleau, 2011; Garud and Karnøe, 2003; Højgaard Christiansen and Lounsbury, 2013). The emergence of innovative institutional arrangements may be understood as the result of on-going reshuffling of heterogeneous resources at hand within the institutional context (Leca and Naccache, 2006). These studies depict institutional innovation as an incremental process, rather than a radical one. Almost anything present in the institutional context may constitute a resource for institutional innovation: residues of old institutional order (Zietsma and Macknight, 2009), cultural elements such as symbols and logics (Højgaard Christiansen and Lounsbury, 2013), calculative tools and devices (Déjean *et al.*, 2004), narratives and metaphores (Slager *et al.*, 2012); shared culture and meanings (Hargadon and Douglas, 2001). The recombining process as known as reflexive dialogue is now quite well understood. Nevertheless, the mechanisms whereby an arrangement is selected during the reflexive dialogue are unknown. Some scholars suggest that the relevance of the arrangements generated during the reflexive dialogue is systematically assessed by a test (Baker and Nelson, 2005; Duymedjian and Rüling, 2010).

Drawing on the research program on the performativity of economics, we explore the different modalities whereby innovative arrangements are tested (Callon, 1998; Guala, 2005; 2007; MacKenzie and Millo, 2003; MacKenzie, 2003; 2006; 2007). Muniesa and Callon (2007) distinguish between three experimental configurations within which such tests are organized: laboratories, platforms and *in vivo*. We particularly focus on the role of platforms in organizing the testing of the output of institutional *bricolage*. A platform refers to an experimental configuration open to heterogeneous actors (not only scientists but also policy makers, experts from the industry and other stakeholders) that engage in institutional

bricolage and test the alternative outputs of such *bricolage*. In the context of institutional theory, our objective is to identify and describe the mechanisms at play in the selection of the output of *bricolage* inside platforms.

To inform this question, we conducted a qualitative study of tow *bricolage* episodes undertaken in such a platform during the institutionalization of the European carbon market. The European carbon market is an institutional innovation which early origin may be traced to a current of economic theory developed in the 1960s by Coase (1960). The making of concrete carbon markets involved intense *bricolage* on the theory to transform it into viable, collectively accepted regulation. After the Kyoto Protocol, many platforms arose in Europe and hosted such *bricolage* (Callon, 2009; Wettestad, 2005). One of them - the GETS platform run by the electricity sector, played a crucial role in the making of the European carbon market. Analyzing the archives of the GETS platform, we examine how its members engaged in institutional *bricolage* to construct a functional carbon market and mobilize allies around their institutional project. We found three selection mechanisms of innovative institutional arrangements : ***tacit compromise***, ***natural selection*** and ***negotiation***.

Our contribution is threefold. First, we contribute to the neo-institutional literature by identifying three selection mechanisms of institutional innovations: *tacit compromise, natural selection and negotiation*. We also highlight the role of platforms in processes of institutional innovation. Second, we contribute to the literature on the performativity of economics by describing empirically the three activities undertaken on platforms: *crafting*, *testing* and *evaluating*. Third, we contribute to the literature on organizational *bricolage* by showing that selection may occur anytime during the reflexive dialogue, whereas previous studies suggest that selection occurs only during the *crafting*.

THEORETICAL CONTEXT

Institutional Innovation as *Bricolage*

An increasing number of neo-institutional studies describe innovation as the reshuffling of resources at hand within the institutional context into a new arrangement (Garud and Karnøe, 2003; Leca and Naccache, 2006; Rao *et al.*, 2005; Zietsma and Macknight, 2009). Innovation is depicted as an incremental process, rather than a radical one, that involves recombining almost anything, present in the institutional context: residues of old institutional order (Zietsma and Macknight, 2009), cultural elements such as symbols and logics (Højgaard Christiansen and Lounsbury, 2013), calculative tools and devices (Arjaliès, 2013; Déjean *et al.*, 2004), narratives and metaphors (Suddaby and Greenwood, 2005; Slager *et al.*, 2012); shared culture and meanings (Hargadon and Douglas, 2001). These studies envision the institutional context as a toolkit, from which designers may pick up elements at will. They agree that new institutions arise through continuous reshuffling of old institutional elements. More recently, neo-institutional scholars have used the concept of *bricolage* to qualify such recombining process (Boxenbaum and Rouleau, 2011; Cartel, 2013; Garud and Karnøe, 2003; Glynn, 2008; Højgaard Christiansen and Lounsbury, 2013).

Introduced by Levi Strauss (1962; 1966), the concept of *bricolage* qualifies a quite singular way of acting that results in the production of novel arrangements. Since Levi-Strauss seminal writings (*Ibid.*), the notion of *bricolage* has increasingly been mobilized within organizational studies to characterize innovation situations and practices (see Duymedjian and Rüling, 2010 for a detailed review of the concept of *bricolage* within the management and organizational studies). Here are the main characteristics of *bricolage* that have been borrowed to Levi-Strauss and further developed. First, the nature of the resources used, often obsolete objects and residues is not associated with traditional robust innovation (Baker *et al.*, 2003). Second, the resources are often diverted from their original use to acquire new meanings and identities

that they were never intended to when they were designed (Baker and Nelson, 2005; Ciborra, 1996). Third, the design process is rather distributed, unpredictable, complex and unplanned (Ciborra, 2002; Garud and Karnøe, 2003). Eventually, it seems that the project of collective *bricolage* is more about fostering compromising between actors that are driven by heterogeneous, sometimes antagonistic, logics rather than generating robust or original solutions (Højgaard Christiansen and Lounsbury, 2013). The reshuffling process whereby novel arrangements are generated is referred to as *reflexive dialogue*.

When it comes to institutions, the reflexive dialogue enables both the creation of novel institutional arrangements. However, the mechanisms whereby an institutional arrangement is selected during the reflexive dialogue is unknown. Indeed, the reshuffling of institutional elements potentially generates a vast panel of competing arrangements among which the *bricoleur*(s) must operate a selection. The literature on organizational *bricolage* suggests that arrangements are tested during the reflexive dialogue and that the *bricoleur* that follows an essay and error progression (Duymedjian and Rüling, 2010; Garud and Karnøe, 2003).

This paper aims to enhance the understanding of institutional innovation processes by analyzing how emerging institutional arrangements are selected. In particular, we focus on how the testing of innovative arrangements is organized.

Exploring the Role of Testing in Institutional *Bricolage*: the Inputs of the Research Program on the Performativity of Economics

The research program on the performativity of economics considerably enriches the understanding of the conditions under which the testing of innovative arrangements is organized (Callon, 1998; Guala, 2005; 2007; MacKenzie and Millo, 2003; MacKenzie, 2003; 2006; 2007). Focusing on the role of experimentation in processes of economic innovation, Muniesa and Callon (2007) identify three ideal typical "locations" in which collective testing is organized.

Three experimental configurations of tests.

In order to qualify such "locations", Muniesa and Callon (2007) distinguish between three ideal typical experimental configurations of experimentation: the laboratory, the platform and *in vivo* experiments. Such locations arise and play considerable role during "experimental episodes" of innovation processes. Their role is to catalyze mutual adjustment between an innovation (idea or concept) and the socio-technical conditions under which it becomes operational.

The laboratory refers to confined spaces, which access is restricted to a limited number of actors, defined in advance. In general, the actors authorized inside the laboratory come from the same intellectual domain. The laboratory is characterized by the distinction it operates between the outside – the "real economy" – and the inside – the artificial representation of economy of the laboratory. In order to be studied, economic objects undergo a purification process: they must be simplified and stylized to fit the manipulation. The knowledge that is expected to be produced in such spaces can be labeled as "scientific knowledge". Its demonstration and diffusion is ensured through conferences and scientific colloquiums.

A second space of experimentation identified by Muniesa and Callon (2007) is termed platform. The platform refers to a space that, in comparison to the laboratory, is more open toward the "outside". Participants - their role and nature - are likely to evolve over time, and join the experimentation. Such a configuration enables new forms of interactions, in particular, the hybridization and confrontation of different domains of knowledge, competences and interests. The platform configuration enables to test objects that are more complex and closer to "real economic objects" than the laboratory. Demonstration in platforms is more about achieving a compromise – shared understandings and expectations – between the participants than creating scientific knowledge.

Eventually, economic experiments might also take place *in vivo*, so to say directly on the objects of "real economy". Compared to the laboratory configuration, the distinction between the outside and the inside is definitively abolished. The list of participants is likely to evolve during the experimentation moment and the experimental objects are directly taken from the environment. As no effort is made to theorize and purify them, they keep the status of black box and what is observed is not how they are transformed but rather how they react to the process.

The particular role of platforms in selecting the output of bricolage.

Among these three ideal-typical configurations, one is particularly favorable to *bricolage* processes (Ciborra, 1996; 2002; Muniesa and Callon): the platform. Contrary to the laboratory and *in vivo* experiments that have already received considerable attention (Latour, 1987; Muniesa, 2003), platforms stem from an intuition of Muniesa and Callon (2007) and have never been observed empirically. As a consequence, the role they play in the making of our institutional patterns deserves more attention. In order to analyze selection mechanisms during processes of institutional *bricolage*, the paper explores the role of platforms.

METHOD AND DATA

Field Settings

The European carbon market: a product of bricolage.

The European carbon market is the first and largest carbon market in the world. It was enacted in 2003 as a result of a two years consultation process among the different stakeholders including the industry, NGO's, the electricity sector, the different European governments and the European Commission (Braun, 2009; Callon, 2009; Christiansen and Wettestad, 2003; Skjærseth and Wettestad, 2008; Wettestad, 2005). The Eu-ETS is now providing the basic framework for the construction of new carbon markets all over the world.

Carbon markets in general and the Eu-ETS in particular, are singular devices imagined and designed to organize the collective mitigation effort on climate change. They materialized into hybrid forms, at the frontier between economic devices, environmental policy devices and managerial devices. First, a carbon market is an economic device as it relies on strong economic theory developed in the 1960 in the United States by a series of reputed economists: Coase (1960), Crocker (1966), Dales (1968) and Montgomery (1972). It is also widely considered as a public policy device. Cap and Trade markets are classified under the category of command and control devices. They are implemented by public authorities when facing problems in managing common goods (Hardin, 1968). Thirdly, they are managerial devices as they are supposed to guide emission reductions and stimulate technology innovation at the company level. The carbon price that is delivered by such markets is supposed to inform managerial decisions.

Carbon markets - as known as cap and trade - are characterized by the conjunction of three different institutional logics, environmental, economic and managerial (see Figure I). The cap or limit refers to the environmental constraint set by the public authority; Trade refers to the type of activities and behaviors that are undertaken on the device. Eventually a managerial logic is associated to carbon markets as they progressively became considered as decision making tools for companies. This heterogeneity is identifiable when reading the European carbon market directive that is literally invaded by managerial language (projects-based mechanisms; credits; monitoring and reporting system; energy-efficient technologies), economic locutions (cost effective functioning; banking) and environmental jargon (e.g. greenhouse gas concentrations; IPCC targets).

Insert Figure 1 about here

The different platforms in competition during the institutionalization process.

After the Kyoto Protocol, alongside the effort of the European Commission to design a viable carbon market, intense collective inquiry was organized by different European actors including companies, governments, economists and NGO's that engaged in series of experiments on carbon markets inside platforms (Braun, 2009; Callon, 2009). Among these experiments, the most famous are the carbon market prototype experimented by the energy company British Petroleum at the company level, the Climate Change Levy imagined by the United Kingdom and the simulation organized by the economists of the International Energy Agency in the Balkan region (Christiansen and Wettestad, 2003; Ellerman and Butchner, 2007; Zapfel and Vaino, 2002). During this "experimental moment" in the wild, many alternative designs of carbon markets were generated, discussed, confronted and negotiated inside platforms (Callon, 2009; Wettestad, 2005). Tensions arose and fierce technical debates emerged as regard the desirable design of carbon markets (Hepburn *et al*., 2006; Neuhoff *et al*., 2006).

In 2001, the European Commission organized a consultation meeting between the different platforms for them to discuss and negotiate the details of the design of the forthcoming carbon market. The compromise that was found constituted the technical basis of the directive establishing an emission trading scheme in Europe. The design that was eventually institutionalized is exactly similar to the one developed by the electricity sector inside the GETS platform - Greenhouse gas and Electricity Trading Simulation. The European carbon market was eventually launched in 2005 by the European Commission as an experimentation. If it was not for a few experts, and two academic articles (Braun, 2009; Skjaerseth and Wettestad, 2013) vaguely citing the experiment, the GETS platform would have been completely forgotten.

The GETS platform.

The GETS platform may be described as the conjunction of three dimensions: (1) a ***net of actors*** - the *bricoleurs* (2) gathered around an ***experimental device*** - a carbon market prototype (3) undertaking ***bricolage*** on the prototype (see Figure 2).

Insert Figure 2 about here

The GETS platform hosted two *bricolage* episodes that played a great role in the institutionalization of the Eu-ETS as they hosted the main stakeholders of the process. The first *bricolage* episode involved only the European electricity companies whereas the second one extended the net of participants to the European industry, financial institutions and the European Commission. The participants to the platform engaged in collective *bricolage* on a prototype of carbon market and eventually reached a compromise toward the most desirable design.

The paper explores in detail the role of the GETS platform in the making of the European carbon market. We reconstruct the two *bricolage* episodes undertaken inside the platform and highlight the micro-mechanisms inside the platform that led to selection of the so-called GETS2.1 design, that was eventually institutionalized in 2003.

Data Collection

We conducted an in-depth longitudinal case study analysis covering a 5-year period from the "preparatory phase" of Kyoto in 1997 to the EU-ETS implementation in 2003 (Pettigrew, 1990). The data were collected over two and a half years of in-depth investigation, from December 2009 to June 2012. We collected two bodies of data.

Archival research.

First, we collected archives of both the GETS simulation (e.g. internal documents such as personal mail archives, companies' internal reports and external documents such as Eurelectric's official position papers, GETS simulation reports) and the European Emission Trading Scheme directive (e.g. draft projects, green papers, white papers, the written accounts of the European Commission's stakeholder meetings). These documents provided us with valuable information on (1) the *bricolage* activities undertaken in the GETS platform for the duration of the GETS experiments; (2) The co-evolution of the GETS experiment and its institutional context.

Interviews.

We supplemented the archival research with interviews with both the actors of the GETS and the main stakeholders of the making of the Eu-ETS. We were interested in the role they played during the institutional process, either as *bricoleurs* inside the GETS platform, or as *bricoleurs* outside the GETS platform. What were their strategic positions towards carbon markets and how did these positions evolve throughout the GETS experiments? What types of strategic alliances were created in the GETS platform? We held 18 semi-structured interviews with these actors. We distinguish between three types of actors playing different roles in the GETS experiment: (1) the organisers of the experiment (The members of Eurelectric's working group on climate change and an expert from the international energy agency); (2) participants to the role play (representative of the electricity companies that participated, the representatives of industrial companies and financial institutions that participated); and (3) external contributors (A member of the group on an emission trading scheme at the European Commission and other economists and experts in view at this moment).

Among the organisers of the role play, we interviewed two members of Eurelectric: (1) John Scowcroft, Head of Eurelectric's working group on climate change, who, since he had

been in charge of the dossier on the liberalisation of the electricity sector at UNIPEDE, had become "a devoted supporter of market instruments" (Scowcroft, 2012); and (2) Jean-Yves Caneill, a member of the working group who had acquired special skills in modelling during his PhD. From the International Energy Agency, we interviewed Richard Baron, a young economist specialised in emission trading, who was in charge of supervising the GETS simulation. From ParisBourse stock market, we interviewed Thierry Carol, a young trader interested in the developments surrounding environmental markets. Our questions were oriented into mainly five directions: their role in the platform, what they learnt during the GETS episode (about the design of carbon markets, and the effects they could have); what were the different possible alternatives for the carbon market design and what were their selection criteria; what were the positions of the platform members toward carbon markets before and after the GETS episodes; how was the platform perceived externally.

Among the participants to the role play, we interviewed representatives of each sector involved – electricity, industry, financial –, in order to compare their strategic positions and expectations with regard to carbon markets and the evolution of these positions over the course of the experiments. We interviewed Jean-Yves Caneill again in his capacity as head of climate policy at Electricité de France[1]. From the industry, we met Chris Boyd, who was in charge of sustainability issues at Lafarge[2] and was in favour of market-based instruments, as well as two members of the paper industry. From the financial sector, we interviewed Dirk Forister from NatSource, an asset management services provider for environmental markets. He was in charge of defending the financial sector's participation in the EU-ETS as the sector's participation in a European carbon market was controversial. We weren't able to interview Peter Vis from the European Commission that contributed to the GETS experiment as an external advisor. We asked them if they had made propositions to the design of the

[1]Electricité de France is the French leader in the electricity sector
[2]Lafarge is the French leader in the cement sector

carbon market prototype, what they learnt during the role play, and what were the crucial elements that made them prefer one specific design better than another.

As regards the main stakeholders who were not directly involved in the experiments, we interviewed Peter Zapfel, a member of the team in charge of the Dossier at the European Commission, to understand the nature of the relations between the EC and the electricity sector. We also interviewed two carbon economists and one member of the French industrial think tank on sustainable development "Entreprises Pour l'Environnement" (EPE), who enriched our understanding of the events that led from Kyoto to the enactment of the EU-ETS. These actors are well known for the role they played during the institutionalization phase of the Eu-ETS and we wanted their opinion on the role that GETS played during the process.

Data Analysis

We analyzed the data in four steps. First, we familiarized ourselves with the GETS experiment by reading the archival materials as well as the paper positions addressed to the European Commission during the period considered (1999-2001). This first contact with the data gave us insights into the controversial issues that were debated, allowed us to identify key events and provided background knowledge about both the experiment and its institutional context.

Secondly, we build a narrative account of the GETS experimentation together with the evolution of the institutional context in which it occurred (Langley, 1999). Drawing on both the experimentation archives and the archives of the legal texts enacting carbon markets at the European Commission. Our chronology was validated by an expert that participated to the GETS platform, Mr Jean-Yves Caneill (see Figure 3).

Thirdly, we traced instances referring to the organizational activities undertaken in the platforms during each of the two GETS episodes. We identified two successive episodes of ***crafting***, ***testing*** and ***evaluating*** of the carbon market prototype inside the GETS platform.

Insert Figure 3 about here

Eventually, we conducted a second round of coding to identify the selection mechanisms at play during the three activities undertaken on the platform.

FINDINGS

Bricolage Inside the GETS Platform: Crafting, Testing and Evaluating a Carbon Market Prototype

Bricolage in the GETS platform episode 1: Prototyping.

Following his intuition that carbon markets could become a reality soon in Europe, John Scowcroft, head of climate policy at Eurelectric decided to prepare the electricity sector. In December 1988, Eurelectric working group on climate change, together with ParisBourse and the IEA engaged in a first episode of *bricolage* on carbon markets on the GETS platform. The *bricoleurs* first *crafted* a prototype of carbon market. At the beginning of 1999, Eurelectric's working group on climate change organised a role play to *test* the prototype, involving the main European electricity companies. The results of the test were further discussed and *evaluated*. we present these three activities in detail here

Crafting 1. The output of the *crafting* is a carbon market prototype, so to say, a set of rules that frames carbon trading (cf. Figure 4).

Insert Figure 4 about here

The members of Eurelectric working group on climate change collectively defined the rules of the prototype. To define the rules, the working group drew on divers sources. The first one is the architecture of the sulphur market that had taken place previously in the United States that gave a general idea of what a carbon market should look like. Another important source was the economic theory that had been developed in the sixties in the US. To gain expertise with these domains of knowledge, Eurelectric's working group on climate change invited economists experts in cap and trade theory to familiarise with the basics of economic theory. They also organized a trip to the United states to visit utilities that had been constrained by the sulphur market. Following this learning episode, the working group discussed the different options for the rules.

One simple example of rule is the rule that defines the nature of carbon credits. The working group decided that a carbon credit would be equal to a tone of carbon. Technical decisions were made on the nature of the market: should it be a baseline and credit such as its cousin in the United States, or rather a cap and trade as economic theory recommended, or even maybe a project market that were proposed in the Kyoto Protocol? Sensitive decisions were to be made on more touchy topics such as the "allocation rule". The allocation rule defines the protocol whereby carbon credits are allocated to the companies. Theoretically, many options were imaginable such as auctioning or negotiating. The working group chose the grandfathering option that consists in allocating credits to a company according to its past emissions. The advantage of this option for the electricity sector is that credits are attributed for free (which is not the case with auctions for instance). Due to the reluctance of the electricity sector toward any carbon constraint at this moment, the working group chose the grandfathering option even if they would have preferred an auctioning method for theoretical

reasons. The working group then invited the International Energy Agency, which had expertise on cap and trade markets theory, to refine the rules.

Testing 1. In order to test the carbon market prototype, Eurelectric, in collaboration with the International Energy Agency and ParisBourse (the French stock exchange), organized a role play between companies from the electricity sector. The objectives of the test were (1) to assess the effects of a carbon constraint on power generation (2) to learn how carbon trading could be integrated in companies' activity; (3) to draw practical lessons for the design of carbon markets.

The role play consisted in setting a carbon constraint to the companies. To comply with their constraint, electricity companies would engage in carbon trading on the market prototype. To perform the exchanges of carbon assets, ParisBourse lent its trading platform during closing hours. Nineteen European power companies volunteered to participate to the role play. The role play was organized in a way that distances the test from real conditions. First, the players were masked: the electricity companies participate under a fake identity. Before the beginning of the game, each company was asked to create a virtual profile: it had to select an energy mix and installed capacity. For instance, virtual company 1 chose 5% wind power, 26% coal and 69% cogeneration for its energy mix. Only the organizers (Eurelectric, ParisBourse and the IEA) knew what real company corresponded to what virtual profile. A total of sixteen virtual companies were created. Second, unrealistic assumptions were made by the organizers for instance on emission constraints and fuel prices. Each of the virtual companies had to comply with both national electricity demand and a carbon emission target (8% over emissions for the year 2000). To the contrary, some elements were explicitly intended to mimic real conditions as closely as possible. For example, to reach their targets, the organizers provided virtual companies with three options : not only they could trade carbon (buying carbon trading if the carbon target is exceeded). They could also trade

electricity (buy cleaner electricity for instance and reduce their own production) with other virtual companies, or invest in clean technologies (to reduce carbon footprint).

> *"In order to obtain a simulation that would generate realistic results, some real world constraints were imposed on the activity of the virtual companies"* (GETS1 report p6).

The role play lasted eight weeks. Each Wednesday, the representatives of each virtual company, wherever the real company was physically located, would log to a collective trading session during two hours. Each session represented either one or two years of activity. The session provided them with the data they needed to build their carbon strategies. Of course, the companies were virtual so the strategies deployed and tested by each member were not associated with a real company. At the end of the 8 weeks of the role play, all companies but two complied with their objective. The working hypothesis made by Eurelectric's workgroup is that some reluctant companies tried to sabotage the results and didn't comply on purpose.

Evaluating. The evaluation of the prototype consisted in (1) deciding whether carbon markets were desirable or not in a carbon constrained world, and (2) discussing the relevance of the different design features of the prototype. It was undertaken by the participants to the role play (so to say members of the European electricity companies that participated to the role play), the members of Eurelectric's working group on climate change, and the International Energy Agency. Surprisingly, most of the electricity companies that had participated to the role play agreed on the desirability of a carbon markets, which seemed difficult before the role play. Only the German companies that did not believe that the Commission would constrain them were still ready to defend their position against a carbon market project. Indeed, companies in France and in the UK were in favour of carbon markets whereas German companies were quite reluctant. Italian and Spanish companies also were reserved on their positions. Both Jean-Yves Caneill and John Scowcroft emphasised the role

that GETS 1 played in readjusting positions within the electricity sector. As we already mentioned,

> "*Culturally, they were not ready for market-based instruments*." (Jean-Yves Caneill, Participant to the role play, May 2011)

The evaluation criteria mobilized by the platform members fall into two dominant logics.

A managerial logic: the role play highlighted that a carbon constraint and a carbon market were two independent items. After the role play, companies did not envision carbon trading as a constraint any more but as a tool for compliance.

> *"The simulation clearly showed that trading could help participants to best manage their CO2 emission objective together with their core activity."* (GETS1, 1999: 25)

Thanks to the flexibility of the experimental carbon market that enabled to arbitrate choices between different managerial strategies (trading carbon, trading electricity, investing in new capacity), companies that relied on trading easily achieved their objectives.

> *"Trading provided the opportunity to manage their (the virtual companies) extra CO2 permits as an asset, either to be used as banking from one period to the next, or to generate revenues, in order to minimise their cost of meeting the CO2 emission objective."* (GETS1, 1999: 25)

An economic logic: the testing of the experimental carbon market made it clear that, from an economic point of view, a carbon market was much more desirable than a carbon tax.

> "*The main learning point derived from GETS 1 was that a carbon market could help reduce compliance costs. This point convinced most of the companies that were*

reluctant before the experiment." (John Scowcroft, Head of sustainable development at Eurelectric, October 2010).

Except for the German companies that left the platform, the electricity sector collectively agreed that carbon markets should be institutionalized as a regulation tool at the European level. Their objective was now to refine their position on the design of carbon markets (revise the prototype rules) and mobilise allies toward the project.

Bricolage in the GETS platform episode 2: Mobilizing allies.

Eurelectric's working group learnt that the Commission was working on a Green Paper on greenhouse gas emissions trading, which was likely to be the first step toward the implementation of a carbon market in Europe. The results of GETS 1 were used to draft a Position Paper on the Commission's Green Paper, in favour of carbon markets. Peter Vis, one of the civil servant of the Commission strongly engaged in the writing of the Green Paper, was keen to promote the constructive attitude of the power sector as it could become a key ally to implement the scheme. Indeed, the European industry seemed hostile to any form of carbon regulation, and the Commission needed allies to institutionalize carbon markets as the corner stone of its mitigation policy. Given the recent failure of the carbon tax, Jos Delbeke, head of the team in charge of climate policy, really needed this measure to be accepted.

For both the electricity sector and the European Commission, it was now of major importance to convince the rest of the industry of the advantages of a carbon market. This would not be an easy task as the industry mostly perceived the GETS experiment as a threat, and carbon markets as a constraint. Indeed, as John Scowcroft told us, they saw the experiment as a way for the electricity sector to secure strong positions that only they would benefit from. Peter Zapfel, a member of Jos Delbeke's team, confided us that the dialogue with the industrial actors sometimes revealed to be very tough.

In order to ensure the participation of the rest of the industry, Eurelectric decided to organize a second simulation with the industrial actors mentioned in the Commission's green paper.

> *"We were afraid that the rest of the industry would kill the process so we decided to involve them in another simulation. Had we not involved the rest of the industry, we might not have done GETS 2."* (John Scowcroft, Head of the working group on climate change at Eurelectric, May 2012)

Crafting 2. Six industrial sectors[3] - Iron and Steel; Refining; Chemicals; Glass; building materials and Paper – and the financial sector were invited to join the platform. Eurelectric'sworking group on climate change also invited Peter Vis from the European Commission to put in dialogue the design of the GETS and the project of the Commission.

> *"We invited Peter Vis to join the steering committee. He didn't show up for every session but he did provide considerable input. His cooperation helped us to ensure consistency between the European Commission's view and the industrial view"* (John Scowcroft, Head of the working group on climate change at Eurelectric, May 2012).

In order to ensure constructive collaboration from the new comers that were mainly hostile to the idea of carbon markets, each guest was welcome to make some inputs to the experimental market device. Participants were asked to make a written proposition to a Steering Committee, composed of the members of the working group and a consultant that had been retained to supervise the exercise. The steering Committee would analyze every proposition and decide whether it would be included to the design of the carbon market or not. In practice, the steering Committee only rejected propositions that were technically too

[3]All of the sectors discussed in the European Commission's Green Paper on greenhouse gas emissions trading.

complex to be tested in the context of the platform. For example, the idea of coupling the carbon market to a green bond system on energy was too complex to be organized.

Most of the participants did make propositions to amend the rules and the technical features of the prototype that had been crafted during the first *bricolage* episode. One member asked to include "Kyoto Project Mechanisms" into the market rules. Kyoto project mechanisms are a type of market that is not cap and trade. It consists for a company (1) in reducing emissions in another company (2) through a project (technology transfer for instance). In exchange, company 1 gets as many credits as the project reduces emissions in company 2.

Of course, all the propositions were not compatible. For instance, three allocation methods (the modality whereby carbon credits are distributed to the companies) were proposed, auctioning, benchmarking and grandfathering, respectively sponsored by the European Commission, the cement sector, the rest of the industry. At the end of the day, three alternative designs (each of them included a different allocation method) were generated, ready to be tested. These designs where very similar, except for the allocation method (see figure 5).

Insert Figure 5 about here

Testing 2. The test of the three alternative markets that were crafted took the same form as in the first episode: a role play. Again, each participant had to create and register a virtual profile. Contrary to the first simulation, trading could be performed on both spot and future market. Furthermore, the models forecasting evolutions in prices and energy demand had been refined by PricewaterhouseCoopers since the last game.

Three simulations were organized successively in order to test the three alternative products of the crafting.

> The simulations "*took place over a six month period: the first simulation occurred in February-March, the second in April-May and the third one in June. Each simulation was spread over 4 or 5 sessions taking place each Wednesday afternoon. Each of these sessions included 2 to 5 years of simulations, with each year simulated over one hour." (GETS 2 report p25)*

The simulations were organized as follows: a pre-opening session between 12:30 and 13:00 was dedicated to the preparation of the session: the participants had to connect to the session. The trading platform is closed during the pre-opening. The session opens at 13:00 but the market remains closed until 13:20. During this time lap, participants define their strategy according to the information provided on the GETS website (e.g. energy prices, carbon prices of previous sessions, reporting information from previous sessions). At 13:20, market opens and participants trade. The market closes again from 14:00 to 14:20 and re-opens for another compliance period until 15:00 and so on. At the end of each simulation session, the participants had to carry out electronic reporting (GHG emissions, and production) on the web site created by the consulting agency.

The concrete implementation of each proposition with the existing prototype as well as their feasibility was organized by the consulting agency. For instance, to enable the co-existence of relative targets (asked by the cement sector) and absolute targets (asked by the others sectors), PricewaterhouseCoopers had to create a sophisticated "gateway" system. During the simulation the gateway system "bugged".

> *"Price had to cheat on the allocations to make it work."* (John Scowcroft, Head of the working group on climate change at Eurelectric, May, 2012)

Evaluating 2. At the level of the industry, the second simulation had a similar learning impact as GETS1 had at the scale of the electricity sector.

> "*The role play provided the learning that was necessary to convince the industry as it helped defuse the negative connotations associated with it*." (Jean-Yves Caneill, Participant to the simulation as a member of Eurelectric, December 2009).

For some of the few participants that were already engaged on the climate issue such as Chris Boyd[4] in the cement sector, the role play did not change their vision. Nevertheless, he told us that the experiment triggered an intellectual switch in his company as he invited other members of Lafarge to participate to the role play. He believes that GETS had a real impact on the diffusion of the idea of a carbon market to the board of directors.

> "*The experiment did convince my colleagues at Lafarge that were not familiar with the matter, in particular in the financial division*" (Chris Boyd, previously in charge of sustainable development at Lafarge, November 2011).

At the end of the second experiment, the members of the industry that were presented by the Commission to take part to the carbon market were intellectually ready for market based instruments. Of course, they were not in favour of carbon regulation but as it was inevitable, they had acknowledged the relevance of carbon markets to provide flexibility to the constraint.

[4] Chris Boyd was previously in charge of sustainable development at Lafarge, the French leader of the cement sector.

Three different criteria were at play in the evaluation of the second experiment. In line with the first experiment, economic as well as managerial criteria were present in the acceptance of carbon market.

A managerial logic: companies were convinced by the fact that a carbon market rapidly expresses the price of carbon that they should rely on to arbitrate between different strategies.

An economic logic: the reason why grandfathering was preferred to auctioning by companies as regard the allocation method is that grandfathering provides an economic income as credits are attributed for free. Also, the participation of financial actors to the role play enhanced the fluidity and depth of the market which were criteria that played an important role according to the final report.

An environmental logic: For decision makers, the key aspect of the role play is that it helped defuse negative opinion of the industry toward carbon markets. Even if the European Commission and its economists were in favour of auctioning for reasons of market efficiency, they were keen to promote a device that they knew would be accepted by a great majority of actors. Selection of the product of *bricolage*: the mechanisms at play

The Selection Mechanisms at Play

Now that we have presented the two episodes of *bricolage* in the GETS platform, we will focus in more details to the selection mechanisms at play. At each step of the *bricolage* (crafting, testing, evaluating), choices where made as regard the design of the carbon market. We particularly identified three selection mechanisms: tacit compromise, natural selection and negotiation.

Tacit compromise.

An example of tacit compromise is the form of selection at play during the first crafting episode as regard the allocation method. The *bricoleurs* (the working group on climate change and the international energy agency) have a preference for an auctioning method. This

preference is informed by economic theory, that states that when quotas are auctioned, the price of carbon is revealed more rapidly by the market. The fact that the market reveals the right price of carbon is an important issue the *bricoleurs*. From a managerial perspective, the price of carbon is a signal that enables electricity companies to arbitrate between different strategies (trading carbon, trading electricity or investing in clean technologies). From an economic perspective, auctioning enhances the global efficiency of the market. Nevertheless, the *bricoleurs* tacitly agreed to select a grandfathering method that they think will be more consensual between the electricity sector. Indeed, the *bricoleurs* are convinced that the European electricity sector, that is already quite reluctant as regard the idea of carbon markets, would more easily accept the exercise if allowances are distributed for free.

Natural selection.

Natural selection refers to the instantaneous formation of preferences toward an element of design. It can be either a positive or negative selection. A simple example of negative natural selection occurs during the second testing episode. As the gateway designed by the consulting agency bugs, the second alternative design that consists in allocating both absolute and relative targets must be abandoned. During this episode, the players all chose absolute targets as it was easier to manipulate, even the ones that had proposed the idea of relative targets.

Natural selection may also be positive. During the first experiment, some elements of design that did not seem so important during the crafting revealed to be of crucial importance. For instance, the possibility to bank allowances from a period to the other revealed crucial in the formation of long term managerial strategies by the players. For the economists of the IEA, it also appears that the possibility of banking emissions stabilizes the price of carbon at the end of each engagement period (the price falls to zero at the end of each period when banking is not allowed).

"*Virtual companies relied a lot on the possibility to bank emission permits generated in the first budget period, or to sell for revenues, when market prices were favorable*." GETS 1 report p25)

Negotiation.

During the first evaluation phase, the players easily reached a compromise on the desirability of a carbon market as a regulatory instrument. The compromise was reached as the logics driving the preferences of the *bricoleurs* were fulfilled. From the point of view of the electricity companies, the test had enabled to revise their understanding of carbon markets and value propositions associated to this type of instrument. Carbon markets seemed to be efficient tools to manage a carbon constraint. From the point of view of the organizers of the game, the important feature was the demonstration that a carbon market was more interesting economically than a tax.

During the second evaluation phase, a compromise was reached on the first alternative design, the so-called GETS 2.1. This design was preferred by the electricity companies and industrial companies because the allocations were distributed for free, compared to the third alternative (GETS 2.3) where allocations are auctioned. From the point of view of the European Commission, the third option was more desirable as auctioning would have ensured economic efficiency. Nevertheless, the important issue was that a regulation on carbon would be accepted, and its environmental integrity respected. The first alternative that was preferred by the industry didn't jeopardize the environmental integrity of carbon markets instruments.

DISCUSSION

On Institutional Theory

Three selection mechanisms of institutional bricolage.

When several alternative arrangements unfold during processes of institutional *bricolage*, the mechanisms whereby one of them is selected are quite unknown. Our findings highlight three selection mechanisms: ***tacit compromise***, ***natural selection*** and ***negotiation***. *Tacit compromise* involves no specific reasoning nor strategy from the *bricoleurs*. It happens when the *bricoleurs* implicitly share the same preferences and intimate understanding of their repertoire. Tacit compromise is not really conscious, neither guided by any strategic aim. *Natural selection* occurs as the *bricoleurs* begin to have more information on the situation. Either the *bricoleurs* realize that an arrangement is not technically feasible when they craft it, either they realize that the arrangement is not viable when they test it. Eventually, negotiation involves an important degree of learning from the *bricoleurs* as they must construct and express a judgment on an arrangement. Negotiation becomes possible after learning from the test and structuring preferences. The test reveals the players their value propositions and preferences. Indeed, value propositions and preferences don't preexist the test. Innovative arrangements are by nature unknown objects and the associated values must be learnt.

Each selection mechanism relates to a certain degree of reflexivity and agency. Tacit compromise involves no reflexivity from the *bricoleurs*. They select an element by default and might not even be conscious that other alternatives where possible. Natural selection involves instantaneous learning. It is based on conscious choices by the *bricoleurs*, informed by a binary test "it works" or "it doesn't work" (learning may occur equally during the three *bricolage* activities). Eventually, negotiation requires a higher degree of reflexivity and agency. Negotiation becomes possible when the *bricoleurs* have learnt enough to form their

preferences as regard a design. Preferences toward the innovation may evolve during all the *bricolage* process as value propositions are revealed.

The role of experimental platforms in processes of institutional bricolage

Experimental platforms play an important role during processes of institutional *bricolage* in the way that they enable learning. Indeed, the nature of the experimental setting is explicitly meant to provoke reality and to be the closest as possible to real conditions. Different artifacts are created in order to mimic reality such as the random introduction of "accidents" in primary energy prices and realistic models of energy demand. Equivalences were created to ensure consistency between the conditions of the simulation and reality. Such effort of organizing the experimental conditions enable to learn things that still have value of truth outside the experimental configuration. To the contrary, an important effort is made to operate a distance between the experimental setting of the platform and real conditions. In the GETS, players are "masked". The mask provokes an epistemological switch in their collective dialogue. They are not defending the position of their organization; they are participating to a collective enquiry. Thus, the mask enables a temporary switch in the player's strategies: from individual strategies to a collective strategy. In the space of the platform, the players are facing the same uncertainties about both the nature of the object that is being designed - the output of *bricolage* -, its potential effects as well as the value propositions associated to it. Thus, they must collectively build the means to learn about what has to be learnt.

Discussion on *Bricolage*

Our findings show that selection may occur at any moment of *bricolage*, so to say during the *crafting*, the *testing*, and the *evaluating* steps. This is quite surprising as previous literature on *bricolage* suggests that selection only occurs during the crafting (Perkman and Spicer, 2013).

During the *crafting*, selection may occur as the result of a tacit compromise between the *bricoleurs*. When the *bricoleurs* share the same understanding of the situation, early convergence may be a strategic way to ensure good collaboration among the participants to the platform. This is the case in GETS 1, when the *bricoleurs* decide to converge on the grandfathering allocation mode to secure collaboration from the rest of the electricity sector. During the crafting episode, selection may also occur as mechanisms of natural selection: it happens that the combination that is proposed is not feasible technically or needs important engineering. In such cases the *bricoleurs* may decide to abandon an alternative, even if the associated value proposition may be important. This is what happened during the second crafting episode when the steering committee rejected the green bond proposition for technical reasons.

During the *testing*, the selection mechanism that we observe is "natural selection". It may happen that the product of *bricolage* doesn't resist to real conditions. The gateway episode during GETS 2 is a good example of natural selection. As the system designed by the consulting agency bugged, it was not possible to project further expectations on this arrangement.

During the *evaluation* step, selection takes the form of a compromise. The selection mechanism is a negotiation between the *bricoleurs*. During the testing, the *bricoleurs* have formed preferences toward the different possible arrangements or toward specific design features, that they are ready to defend during the evaluation. When the preference structure of the *bricoleurs* is similar, then convergence is possible. This was the case during the two evaluation episodes of the GETS platform.

CONCLUSION

We studied two episodes of institutional *bricolage* on the European carbon market inside a platform to understand how innovative arrangements are selected during processes of institutional innovation. We contribute to the three following literatures: institutional theory, the performativity of economics and *bricolage* in organizations. First, in the context of institutional theory, we show the role of platforms in selecting institutional arrangements. We highlight three selection mechanisms of institutional arrangements: *tacit compromise*, *natural selection* and *negotiation*. Tacit compromise, natural selection and negotiation mechanisms involve a growing degree of agency. Second, we contribute to the literature on the performativity of economics by describing empirically the activities undertaken on such platforms: *crafting*, *testing* and *evaluating*. Eventually, we expand the understanding of organizational *bricolage* by suggesting that selection may occur any time during the reflexive dialogue.

Furthermore, our paper suggests that "experimental moments" play an important role during processes of institutional *bricolage*. Indeed, institutionalization processes not only consist in promoting aggressively an innovation that have been previously identified and theorised, such as in the model of the institutional entrepreneur (Battilana *et al.*, 2009). It consists in exploring new options, new possible orders for collective action. Our paper shows how different possible orders are collectively imagined and experienced in platforms. It seems that collective learning is crucial to inform processes of institutional innovation. Traditionally, collective inquiry, the form of learning it conveys, is a dimension of institutional processes that is not explored. It is different from theorization (Greenwood *et al*., 2002; Strang and Meyer, 1993) as theorization may happen only as an ex-post rationalization of innovation (to highlight its strengths compared to previous situation). It seems that experimentation, that is inherent to *bricolage* may play an important role during processes of institutional innovation

as originator of agency. Our findings suggest that experimentation stimulates the degree of agency involved in selection mechanisms. The role of experimentation as an originator of agency may be an interesting track to follow for the understanding of institutional innovation processes.

REFERENCES

Arjaliès, Diane-Laure. 2013. Institutional change in the making: The case of socially responsible investment. *Journal of Accounting and Organizational Change* 9(1).

Baker, Ted, Anne S. Miner, and Dale T. Eesley. 2003. Improvising firms: Bricolage, account giving and improvisational competencies in the founding process. *Research Policy* 32 (2): 255-276.

Baker, Ted, and Reed E. Nelson. 2005. Creating something from nothing: Resource construction through entrepreneurial bricolage . *Administrative Science Quarterly* 50 (3): 329-366.

Boxenbaum, Eva, and Linda Rouleau. 2011. « New knowledge products as bricolage: Metaphors and scripts in organizational theory ». *Academy of Management Review* 36 (2): 272-296.

Cartel, Mélodie. 2013. The making of institutions: Carbon markets as managerial experimentation fields. *PhD dissertation*. Paris: Ecole National Supérieure des Mines de Paris.

Coase, Ronald Harry. 1960. The Problem of Social Cost. *Journal of Law and Economics* 3: 1-44.

Convery, Frank J. 2009. Origins and development of the EU ETS. *Environmental and Resource Economics* 43 (3): 391-412.

Crocker, Thomas D. 1966. The structuring of atmospheric pollution control systems. In Harold Wolozin (Ed.) *The Economics of Air Pollution*, (pp. 61-86). New York: WW Norton.

Dales, John Harkness. 1968. *Pollution,Pproperty and Prices: An Essay in Policy-Making and Economics*. Toronto: University of Toronto Press.

Ellerman, A. Denny, and Barbara K. Buchner. 2007. The European Union emissions trading scheme: origins, allocation, and early results. *Review of Environmental Economics and Policy* 1 (1): 66-87.

Ciborra, Claudia U. 1996. The platform organization: Recombining strategies, structures, and surprises. *Organization Science* 7 (2): 103-118.

Ciborra, Claudio. 2002. *The Labyrinths of Information: Challenging the Wisdom of Systems: Challenging the Wisdom of Systems*. Oxford: Oxford University Press.

Déjean, Frédérique, Jean-Pascal Gond, and Bernard Leca. 2004. Measuring the unmeasured: An institutional entrepreneur strategy in an emerging industry. *Human Relations* 57 (6): 741-764.

Duymedjian, Raffi, and Charles-Clemens Rüling. 2010. Towards a foundation of bricolage in organization and management theory. *Organization Studies* 31 (2): 133-151.

Garud, Raghu, and Peter Karnøe. 2003. Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship. *Research Policy* 32 (2): 277-300.

Glynn, Mary Ann. 2008. Beyond constraint: How institutions enable identities. In Royston Greenwood, Christine Oliver, Kerstin Sahlin and Roy Suddaby (Eds) *The SAGE Handbook of Organizational Institutionalism* (pp. 413-430). Thousand Oaks, CA: SAGE Publishing

Guala, Francesco. 2005. *The Methodology of Experimental Economics*. Cambridge, RU: Cambridge University Press.

———. 2007. How to do things with experimental economics. In Donald MacKenzie, Fabian Muniesa, and Lucia Siu (Eds.) *Do economists make markets? On the performativity of economics* (pp. 128-162). Princeton: Princeton University Press.

Hargadon, Andrew B., and Yellowlees Douglas. 2001. When innovations meet institutions: Edison and the design of the electric light. *Administrative Science Quarterly* 46 (3): 476-501.

Hourcade, Jean-Charles. 2002. Dans le labyrinthe de verre. *Critique Internationale* (2): 143-159.

Højgaard Christiansen, Laerke, and Michael Lounsbury. 2013. Strange brew: Bridging logics via institutional bricolage and the reconstitution of organizational identity. In Michael Lounsbury and Eva Boxenbaum (Eds.), *Institutional Logics in Action* (pp. 199-232). Bingley : Emerald Group Publishing *(Research in the Sociology of Organizations, Vol. 39 Part B)*

Lawrence, Thomas B., and Nelson Phillips. 2004. From Moby Dick to Free Willy: Macro-cultural discourse and institutional entrepreneurship in emerging institutional fields. *Organization* 11 (5): 689-711.

Lévi-Strauss, Claude. 1962. *La pensée sauvage*. Paris: Plon.

———. 1966. *The savage mind*. Chicago: University of Chicago Press.

MacKenzie, Donald. 2003. An equation and its worlds: Bricolage, exemplars, disunity and performativity in financial economics. *Social Studies of Science* 33 (6): 831-868.

———. 2006. An engine, not a camera: how financial models shape markets. Cambridge (Massachusetts): MIT Press.

———. 2007. Is economics performative? Option theory and the construction of derivatives markets ». In Donald A. MacKenzie, Fabian Muniesa, and Lucia Siu (Eds.) *Do economists make markets? On the performativity of economics*, (pp. 54-86) Princeton: Princeton University Press.

MacKenzie, Donald, and Yuval Millo. 2003. Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange. *AJS* 109 (1): 107-145.

Montgomery, W. David. 1972. Markets in licenses and efficient pollution control programs. *Journal of Economic Theory* 5 (3): 395-418.

Muniesa, Fabian. 2003. Des marchés comme algorithmes : Sociologie de la cotation électronique à la bourse de Paris. *PhD dissertation*. Paris : Ecole Nationale Supérieure des Mines de Paris.

Muniesa, Fabian, and Michel Callon. 2007. Economic experiments and the construction of markets. In Donald A. MacKenzie, Fabian Muniesa, and Lucia Siu (Eds.) *Do economists make markets? On the performativity of economics* (pp. 161-189). Princeton, UK: Princeton University Press.

Muniesa, Fabian, and Michel Callon. 2008. La performativité des sciences économiques. In *Papiers de Recherché du CSI*, n°10.

Perkmann, Markus and Andre Spicer. 2013. Bricolage in organizational formation: building organizations from multiple organizational forms. *Presented at the 29th EGOS conference in Montreal*.

Rao, Hayagreeva, Philippe Monin, and Rodolphe Durand. 2005. Border crossing: Bricolage and the erosion of categorical boundaries in French gastronomy. *American Sociological Review* 70 (6): 968-991.

Skjaerseth, Jon Birger, and Jørgen Wettestad. 2013. *Eu Emissions Trading: Initiation Decision-Making and Implementation*. Aldershot: Ashgate.

Slager, Rieneke, Jean-Pascal Gond, and Jeremy Moon. 2012. Standardization as institutional work: The regulatory power of a responsible investment standard. *Organization Studies* 33 (5-6): 763-790.

Suddaby, Roy, and Royston Greenwood. 2005. Rhetorical strategies of legitimacy. *Administrative Science Quarterly* 50(1) : 35-67.

Wettestad, Jørgen. 2005. The making of the 2003 EU emissions trading directive: an ultra-quick process due to entrepreneurial proficiency? *Global Environmental Politics* 5 (1): 1-23.

Zietsma, Charlene, and Brent McKnight. 2009. Building the iron cage: Institutional creation work in the context of competing proto-institutions. In Thomas Lawrence, Roy Suddaby, and Bernard Leca (Eds.), *Institutional Work: Actors and Agency in Institutional Studies of Organizations* (pp. 143-175). Cambridge, UK: Cambridge University Press.

Figure 1. Comparative overview of the different logics represented in the Eu-ETS

	Market Logic	**Environmental Logic**	**Managerial Logic**
Belief system	The device should not Jeopardize economy and competitiveness	The device should enable environmental integrity	The device should provide visibility and action levers to utilities
Focus	**Economic impact** - Fair constraint repartition - Fair allocation	**Environmental impact** "Achieve stabilization of greenhouse gas concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system."	**Managerial impact** - Stable predictable carbon price - Technology Diffusion and Innovation
Structure of the device/ Rules for achievement	**Economic device** Financial trading platform Trading rules	**Public Policy device** Cap setting Monitoring system Penalty system	**Managerial device** Flexibility mechanisms - Project management - Credit banking
Associated practices	Carbon trading	Setting environmental cap	Management of carbon risk

Source: inspired from Thornton and Occasio (1999); Reay and Hinings (2005); Højgaard Christiansen and Lounsbury (2013)

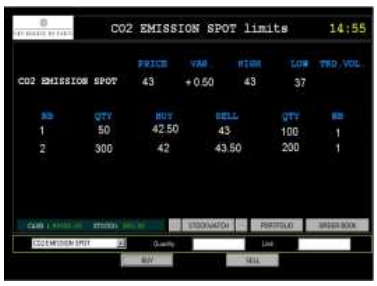
Figure 2. The GETS experimental device

Rules of the game

Gets 1	
Market type	Cap and trade
Commodity	1 quota = 1tCO2eq
Constraint	Up-stream
Scope	6 Kyoto Gases
Procédure	
Allocation	Grandfathering
Permits restitution	At the end of each commitment period
Opt-in Opt-out	No
Flexibilité	
Carbon price mechanisms	
Ceiling price	No
Threshold price	No
Credits	
CDM1&2, JI	**S.O.**
DSM	**S.O.**
Temporal Flexibility	
Banking	Yes
Borrowing	No
Surveillance	
Pénalités	Non discharging

Equipements

Stock exchange



Actors

Organizer: Eurelectric

Technical advisor: ParisBourse

Master of the game: IEA

Participants: utilities

Models

Electricity demand/Allocation models/etc.

Figure3. Chronology of the GETS platform

Episode	Activity	Year	GETS platform	European Commission
Episode 1	*Crafting*	December 1998	Design of the GETS device by Eurelectric working group on CC	
	Testing	March 1999	Simulation 1	
	Evaluating	October 1999	GETS 1 Report	
Episode 2	*Crafting*		Revising the GETS device	
	Testing	February 2000 April 2000 June 2000	Simulation 2.1 Simulation 2.2 Simulation 2.3	
	Evaluating	November 2000	- GETS 2 Report - Presentation of the results at the Bonn climate CoP	
Episode 3	*Crafting*	2001	Stakeholder consultation organized by the European Commission	
		2003		Adoption of the directive 2003/87/EC establishing a European emission trading system
	Testing	January 2005		Launch of the Eu-ETS
	Evaluating	2007		First evaluation and revision of the Eu-ETS

Figure 4. The carbon market prototype

Market type	Cap and trade
Asset	1 quota = 1tCO2eq
Scope	6 Kyoto Gases
Procedures	
Allocation	Grandfathering
Permits restitution	At the end of each engagement period
Reporting	At the end of each engagement period
Opt-in Opt-out	No
Flexibility	
Carbon price mechanisms	
Ceiling price	No
Threshold price	No
Credits	
CDM1&2, JI	No
DSM	No
Temporal Flexibility	
Banking	yes
Borrowing	No
Contrôle	
Pénalties	Non discharging

Figure 5. The three alternative *bricolage*

	GETS 2.1	**GETS 2.2**	**GETS 2.3**
Market Type	Cap and trade		Cap and trade
Target	Absolute		Absolute
Asset	1 permit = 1tCO2eq	1 permit = 1tCO2eq	1 permit = 1tCO2eq
Coverage	6 Kyoto Gases	6 Kyoto Gases	6 Kyoto Gases
Procedure			
Allocation mode	Grandfatherng	Benchmarking and Grandfathering	Auctionning
Permits restitution	End of each commitment Period		End of each commitment Period
Opt-in Opt-out	No		No
Flexibility			
Carbon price mechanisms			
Ceiling price	No	No	No
Threshold price	No	No	No
Credits			
CDM1&2, JI	Yes, 30% limit	Yes, 30% limit	Yes, 30% limit
DSM	No	No	No
Temporal Flexibility			
Banking	Yes	Yes	Yes
Borrowing	No	No	No
Monitoring			
Penalties	Yes, non discharging		Yes, non discharging