

# **Boundary Objects and Organizational Integration**

**by Marina Michalski**

**PhD Candidate**

**School of Business and Management**

**Queen Mary – University of London**

**m.michalski@qmul.ac.uk**

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# BOUNDARY OBJECTS AND ORGANIZATIONAL INTEGRATION

## I. INTRODUCTION

The importance of managing “boundary spanning staff” when collecting external information, interpreting and communicating with their external environment gathered momentum back in the 70’s (see Leifer and Hubber’, 1977). More recently, internal “boundary spanning activities” are the main interest. Levina and Vaast (2005), for instance - drawing on the concept of dynamic capabilities (see Teece, Pisano and Shuen 1997), and on practice-based views of Knowledge Management (see Orlikowski, 2002) - represent internal boundary spanning as a strategic, competitive advantage-creating capability.

Since the early 90’s, the concept of “communities of practice” (Lave & Wenger 1993, Brown & Duguid 1991) has re-positioned boundary lines around practice and knowledge communities - and their unique learning processes (see Carlile 2002, Scarbrough *et al* 2004) -, resulting, sometimes, in blurred boundary lines which may both criss-cross and transcend traditional organization boundaries. Now, information transfer is not enough. Neither is knowledge generation, sharing and diffusion fully manageable: change is a recurrent, negotiated, unpredictable and path-dependent process (Giddens 1984, Orlikowski 2000, Akrich et al 2002). Furthermore, Spender and Grinyer’s (1996) discuss control, integration and effective “boundary management within loosely-coupled systems”, while Orton and Weick (1990) tackle internal heterogeneity through systems that display “*both the responsiveness of the whole and the distinctiveness of its parts*” and allow for the “*interplay of cognition, values, and action*” (p. 27).

Related to that, although from a different perspective, are the notions of Actor-network theory (ANT) (Callon 1986, Akrich et al 2002). ANT emphasizes the role of “translation” in controlling the uncertainty inherent to the introduction of innovations. Translation of locally shared meanings and embedded knowledge is pivotal to internal interactions and the fixation of new knowledge, as intended by the

change agent. Star and Griesemer's (1989) concept of "boundary objects" also considers the impact of power dynamics on the development of innovations, explaining Latour and Callon's concept of "*interéssement*" (see Callon 1986, Ackrich et al 2002) as "*the process of translating the images and concerns of one world into that of another, and then disciplining or maintaining that translation in order to stabilize a powerful network* (Star 1991) - or, as Patriotta (2003) puts it, "*the processes by which knowledge is socially legitimized and made durable.*" (p. 43/4).

Boundary Objects (B.O.) in different shapes – repositories, templates, standardized forms, demarcation maps (Star & Griesemer 1989), and all sorts of "black boxes" (Patriotta 2003, Clark 2003) – are considered not only in their ability to translate meanings across communities, but also in their function as a "necessary nodal point" (Clegg and Wilson 1991), or an "obligatory point of passage" (Law, 1978). B.O.s, according to Star and Griesemer (1989), incorporate methods of standardization that, nevertheless, are malleable to local needs and maximize "both the autonomy and communication between worlds". Furthermore, Garrety and Badham (2000) discuss B.O. as a "springboard" towards effective technical decision-making and Carlile (2002) stresses their role as "*integrating devices that help in the process where individuals represent, learn, negotiate, and alter the current knowledge*".

At this point, however, one's internal alarm bells start ringing, as the differences between the original ANT rationale and Star's B.O concept start to show. Bearing in mind criticisms on ANT's "managerial, engineering, Machiavellian, demiurgic character" (Latour 1999, p.16) - where the main preoccupation seems to be the stabilization of one actant's view over "the network" –, how can we reconcile that with the democratic underpinnings of boundary objects, as set by Star and Griesemer? Where they see a bridge, ANT's proponents see control, prevalence: "*Texts of all sorts, machines, or other physical objects, and people, sometimes separately or more frequently in combination, these (sic) seem to be the obvious raw materials for the actor who seeks to control others at a distance*" (Law, 1986b, p. 255)

So, is the very essence of a boundary object dependent on its inherent "plasticity"? Does it stop being a boundary object when knowledge is "black boxed" and stabilised? In other words, if what lies within a "black box" is not fully understood by

its users, nor have they been involved in the process of framing the knowledge that lies in it, can black boxes indeed be boundary objects, and what is their purpose: to control, to connect, or both? Perhaps, Carlile (2002) is right in proposing a “pragmatic approach” to boundary objects where, apart from allowing the processing and translation of information and knowledge, they also result in the **transformation** of knowledge - which agrees with Callon’s (1991) idea of “irreversibility”, in that the new, validated knowledge makes it impossible for a certain process of translation to be challenged or reversed. Star (1991) herself, a few years after the 1986 paper, seems to recognise the inevitability of the potential power imbalance involved in the creation of boundary objects, although she never ceases to voice the need for a “democracy” of translation:

*“..Among other things, we create metaphors – bridges between those different worlds. Power is about whose metaphor brings worlds together, and holds them there...Metaphors may heal or create, erase or violate, impose a voice or embody more than one voice.”* (p. 52).

It is essential, therefore, to understand how boundary objects are used in practice, as devices for translating interests and values across communities - and, with basis on that, how to generate “politically sound” boundary objects. As Clark (2003) puts it: *“The sociology of translation enables the analyst and creator of organizational innovations to understand that successful, stretched networks are the outcome of processes in which principal agents (e.g. firms) author appeals to the political interests of other agents”* (p. 45), and Bruno (1986), similarly, suggests that: *“In the translation model the study of society therefore moves from the study of the social as this is usually conceived, to a study of methods of association.”* (p. 264)

Boundary objects, then, are considered in their impact on the “methods of association” among the people who populate systems and organizations. This paper uses six different processes occurring at Semco as the basis to further conceptualize the nature and usage of boundary objects.

## II. DATA COLLECTION AND METHODOLOGY

As part of a wider study, fifteen semi-structured interviews with knowledge workers and managers at Semco Industrial Equipments were conducted in August 2004. The recently re-named “Industrial” is, indeed, the oldest strategic unit of Semco, in Brazil. Different functions within Industrial are represented: solutions engineering, sales/applications engineering, marketing, post-sales services, new ventures, TQM, commercial contracts, export, assembly line, HRM, finance, and executive positions. All three hierarchical levels of the unit are also represented. Sources include some internal documents, such as climate evaluation templates and results, evaluation by subordinate templates, and applicants’ grading templates. I observed one “integrated selection” process, had chats by the cooler and at lunch with different people, and joined a birthday do in the hammock area. I also had some pre-formed images about the company through published material, such as Ricardo Semler’s books and interviews, and articles by other authors. This analysis, therefore is shaped by a double translation process: my own interpretations and attributions, as well as the respondents’ interpretations, as they relate their experiences and stories, and voice their (positive and negative) opinions about the company. Perceptions, therefore, are the main raw material for this study. While the interview process alone does not allow for direct observation of individuals in action – and certainly cannot report history as it unfolds- it is, however, perfectly suited to generate a space/moment where participants reflect on their day-to-day experiences, re-tell their own history, and in this process, reveal some of their values.

Certainly, the “macro dimension” and “time-space unfolding” processes cannot possibly be addressed within this research format and time-scale. While some considerations about the relativities of “time” can be derived from the analysis, conclusions related to “place” will need to be kept centred at “Industrial”, in spite of respondents’ constant references to the Brazilian business environment. Semco is by no means a “typical” Brazilian company, and it would be a folly to make macro-cultural generalizations with basis on fifteen interviews. Still, the aspect of national cultures is clearly an issue at Semco, as it is for the general discussion on boundary management. This is undoubtedly a theme for future research.

## **About Semco**

Semco started off as a heavy equipment manufacturer in the 50's, and grew to be predominantly services-oriented, leaving Industrial as the last capital goods supplier within the group and the only one to have experienced from day one the company's well-publicised trajectory into work-place democratisation, and resulting structural fragmentation. Common practices at Industrial reveal a variety of boundary spanning processes such as knowledge brokerage, translation, representation, and trajectories (Brown & Duguid 1998, Garrety & Badham 2000). They have a complex production channel based on the partnership with American and European "technology suppliers", local manufacturing sub-contractors, end-users themselves, not to mention the interaction among their own applications and sales engineers, assembly team, after-sales support staff, external management consultants, customs' officials and export support agencies. Well-managed articulation points are essential for the effectiveness of their highly interwoven and recursive processes, especially in an environment where staff expect full room to manoeuvre.

## **III. THEMES FOR BOUNDARY OBJECT ANALYSIS**

Six examples of boundary processes are used to explore some of the themes found in the literature. They have been chosen for their translating capabilities, rather than for necessarily fitting into Star and Griesemer's original illustrative list of types of boundary objects (1989).

### **A. Plasticity: Boundary Objects as pivots for loosely-coupled systems**

Objects are considered in their "plasticity", that is, in their instrumentality in responding to each community's interests and knowledge, but still contributing towards the organization's overall sense-making and co-ordination.

### **B. Temporality and the Fixation of Knowledge**

Discussions of B.O. as temporary artefacts (Sapeseed & Salter, 2004) contradict considerations of B.O. as relatively stable phenomena such as structures (Pawlowski

2004), black boxes or business processes (Brown & Duguid 1998). Boundary object durability, it seems, still needs much more discussion.

In general, respondents' perception of "time" as related to change and the fixation of procedures seems to be an essential component of the corporation's identity – continuous change and questioning of pre-established practices are central to how they perceive themselves. However, while there are a number of references to practices or tools that "didn't catch on", there is also fierce criticism when historically sanctioned approaches are ignored. Understanding the tensions between Industrial staff's preservation of socially-generated meanings and practices, their embracing of continuous change, and their apparent dislike for crystallized routines is essential to effective boundary management within this culture.

### **C. Power Dynamics**

Parallel to the fixation of knowledge, lies the power dynamics in B.O. management. Attaining "primacy over meanings", establishing certain B.Os. as "obligatory points of passage", and the process of generating "interéssement" are particularly pertinent in this setting. In a company where transparency and full individual participation are officially espoused, the way in which the tools are developed and deployed – and who the "interpreters" are – has direct impact on their potential uses, and, as a result, effectiveness. An understanding of the power dimension with relation to boundary objects is essential for the establishment of pragmatic considerations towards their potential roles: coordination, the creation of a common language and common metaphors, the interpretation of interests, the jockeying for power over visions, or even the generation of new knowledge. (Star and Griesemer 1989; Clark 2003; Scarbrough et al 2004; Carlile 2002).

### **D. Translation/Interpretation of Meanings**

B.O.s as "bridges for meanings" are particularly important in this setting, once Semco's diversification strategy has, understandably, resulted in the loss of value synergies. They need now to decide on what to crystallize and disseminate throughout the corporation – respecting local needs and constraints - and what to leave open to continuous questioning and change. Possibly, this dilemma can only be solved once the different units' worlds are translated across the corporation.

Boundary objects, then, are considered in their translating capabilities at the semantic, syntactic and transformational levels, considering the dynamic interaction among the components of the translation process: physical artefacts, representatives, symbols, trajectories and sub-processes of all sorts.

#### **IV. BOUNDARY OBJECTS AT SEMCO**

##### **A. Organizational Integration Processes**

###### **1. First example: The Semco Way**

###### **Description**

It is the search for common grounds and retrieval of lost meanings, against the inexorable certainty of change, that lies at the heart of an HR driven, corporation-wide initiative which translates from the Portuguese as “Our way of being....” - but to which I refer to as “the Semco Way” for stylistic purposes...

The process is driven by the Human Resources Department, which is now part of the “Corporation” unit of the group – and therefore serves all units- but is still historically and geographically linked to the original Semco and Industrial. . They proposed the idea to the Board of Executives, who initiated a discussion among all management levels. As a result, the voluntary, non-managerial staff referred to as “multipliers” have already been elected in most units to initiate a company-wide debate on their core values. Most multipliers have already been inducted, so that they can better carry out their role at “grassroots” level, in one respondent’s words. The time-scale, procedures and expected outcomes have been left open, and there is still some ambiguity as to its main purpose among respondents.

###### **Analysis**

###### **a) Plasticity**



The initiative's very aim is to find a coherent balance between local views voiced through the multipliers, and the integrity and identity of the corporation. The actual degree of achieved plasticity, however, will depend on the power dynamics within each unit and the attitudes of multipliers as initiative champions.

### **b) Power, Translation and Temporality**

The intention is not semantic, *i.e.* educating different units about each other's industry and jargon; or syntactic, that is generating any form of internal coordination – but it is transformational. The process intends to challenge the status quo and initiate organizational alchemy. It is inevitably a highly political process, with competing visions jockeying for primacy of meanings. Possibly, the prevailing vision may succeed in cascading down to operational management, having, eventually, a coordinating/syntactic effect as well- but it is still too early to tell. The choice of multipliers – or “translators” - will therefore have direct impact on the outcome of this process. The fact that local staff have volunteered as multipliers in itself shows that some degree of “interéssement” has been obtained, but the multiplicity of interpreters also allows for the weakening of the “problematization” phase as a point of fixation of meanings. “Multipliers” can potentially position themselves as instruments to promote the “good old Semco way”; as learners about a new, services-oriented ethos; as restorers of the corporate image; or anything else. People at Industrial, for instance, agree that there is a “problem”. What the “problem” is, though, seems still to be open to people's own interpretations:

*A: “ If people (from different units) can talk to each other, discuss, understand...- using key people, I think....It's no use to put people together who don't know about the culture – They will just stare at each other. ..So, you have to pass on this motivation that the old timers had, show how it is, that this is OK and that is not. To show...To tell the story. I think that is it: to tell the story, because, unfortunately, people have short memories. Suddenly, you get a line manager who doesn't know the story, and things get complicated...”*

*B: “Today, the objective is to recover our way of being, because in these partnerships we formed, we lost this a bit... But, it also has the objective of integrating, adding to it...But, this is not the main objective. Semco had a very*

*strong change 3 years ago and that created an environment...When you have to take a strategic decision, it's hard because it compromises the process a bit. It's hard, because there was a lot of lost credibility I think that to recover it, it will take 5, 6, 7 years...Because, it took us 10 years or more to make people believe....So, the objective is this: to recover the lost credibility....”*

*C: “It is the re-examination of the philosophy of the Semco Group, having as a basis the present reality of the organization, which is very different to the reality of the company when the process was introduced. So, it is about what to do so that we can have a back spine inside the group...that makes sure that the characteristics that are considered fundamental are present in all the enterprises of the organization. The characteristics that people say: this is the ... symbol – the sign that I belong to the Semco Group. “*

*D: “This project was created because when Semco started with Joint Ventures, where Semco wasn't a major shareholder, the culture of the partners started to subvert Semco's culture. So, it's an HR effort to recover Semco's philosophy, culture.....because, Semco's philosophy gives freedom and tries to make people work to the top of their..., at rather high creativity levels...I think that is lost in many, many other units, and even in our MAQ ( Industrial), this is a bit subverted.”*

Surely, respondents from other units could provide us with yet different angles, reinforcing the ambivalent nature of the problematization phase in this particular initiative. Still, this is an essential requirement to achieve all-round enrolment

Finally, what “mobilization” actually means in this process will also be open to personal interpretations. Whether goals are achieved and the population buy into the process is very much a matter of local interpretation concerning what the final goal actually is, and indeed, what the timescale is: catechism, folklore, internal PR, continuous learning, strategic change are very different concepts, with different required time-frames. The verdict, therefore, may be open for an indeterminate period of time.

## **2. Second Example: The Annual Budget**

### **Description**

The annual corporate budget process is one of the few exercises that involves the whole organization: it links not only the members of board and the CEOs/CFOs of the various independent units, but also local staff.

### **The process:**

- The Board of Executives sets up minimum requirements
- Based on an internal marketing and forecasting meeting, staff make personal requests for the budget (directly, in smaller units, or through a budget committee in larger ones). Related negotiations will follow.
- A budget document/presentation is produced.
- Board Meeting: The document is presented to the board by each unit's CEO/CFO.
- Modified proposals are produced, based on Board's recommendations.
- Board's "Acceptance Letter" is produced as "the symbol of their agreement and involvement in local management"
- Monthly monitoring/meeting to update and revise budget

### **Analysis:**

#### **a) Plasticity**

It passes the plasticity test within the Semco context: its top-down/bottom-up approach allows local needs to be satisfied to the very bottom, and yet it helps maintain Semco's common identity: "democracy" and "transparency" are at its very core. Local staff and management exercise "room for manoeuvre", but they legitimate the board's authority, and **expect** them to request adjustments. Multiple loci of interest are being satisfied, but the overall sense of identity is still reinforced.

#### **b) The Political Dimension**

The process certainly exemplifies a successfully fixated "obligatory point of passage", which is not an easy task in this culture. Most of the respondents pride themselves in the company's "shifting" set-up. They often refer to (rather important) practices that "didn't catch on"; and the exact number of employees, product lines,

suppliers – or sub-units, for that matter -, is declared to be “always changing”. However, budgeting procedures have been fixed. What populates each annual plan may vary wildly, and staff feel they can affect the outcome, but they also accept the Board’s primacy and enact annually the almost ceremonial, pre-established procedures.

**c) Translation: semantic, syntactic, transformational.**

The local marketing and budgeting meeting provides a space for the different functional groups to learn from each other – which leads to a very limited level of shared semantics or shared language. It is only in more technical, problem-solving interactions that the various bodies of technical language need to mingle and be clarified. As for syntax, the process standardizes financial planning, scheduling and controlling, but that does not translate into operational coordination among units. The transformational role could be part of it, but is not usually activated. Very extreme across-the-board changes will occur mostly in moments of financial/market difficulty, when, for instance, units are divested and staff laid off, and creative, joint solutions need to be found. However, very stringent guidelines for expansion opportunities prevent the transformation potential during “normal” times: the fact that they outsource first class suppliers of well-proven technology - rather than developing it in-house - means that they miss out on the transformational potential of organic radical innovation. So, the translation potential of the budgeting process is felt vertically rather than horizontally. Perhaps intended to function more as a lift than as a bridge, it is, nevertheless, perceived as a symbol of the organization’s democratic values.

**d) Symbolism**

If the budget process is perceived as a symbol, then the board’s “Letter of Acceptance” is the materialization of that symbol. The letter has no practical function, other than representing “the board’s involvement and interest in local affairs”:

*“We are not a company very much into formalities, but it (the letter) is there to show people that the council is involved, that the presidency is involved, that they are happy with the work. It is a show of satisfaction to the people”.*

Open legitimation of a symbol is in itself meaningful, as at Semco there is a highly pragmatic approach to procedures, where only “useful” practices are enacted. The letter, however, as a symbol of the company’s owners’ right to get involved – and perhaps obligation-, remains an undisputed element of the process. The letter, in fact, is a proxy to a much larger symbol in the organization: Ricardo Semler himself. Throughout the interviews, there are countless, unprompted references to him. His right to have the final say is mostly undisputed, and for many, Semco’s culture is what Semler has willed it to be – in spite of common references to foreign partner companies’ (usually alien) influence.

*A. “..but, for him (Ricardo Semler) to be far, there as a whole structure implemented. He has key people who know what his culture is. And each person here knows what he wants”.*

For all the staff’s “room to manoeuvre” at Semco Industrial - and all the unexpected results from regularly exercised agency - Semler remains a very strong figure-head, even if that is at times translated into disappointment when present practices fall short of the symbol. In spite of his well-publicised detachment from operational and even strategic planning, his right to determine directions seems to be as undisputed as his moral obligation to maintain alive the company’s core values.

#### **e) Temporality**

Time patterns are inbuilt in the nature of this process. While the particular details of each year’s budget are renewed annually, the timing and sequencing of phases throughout the year have been institutionalised, as have the local procedures to finalize it. While flexible and populated by changing needs, this process is certainly durable.

### **3. Third Example: Climate Evaluation Survey**

#### **Description**

The climate evaluation survey is another corporation-wide tool that plays a role in the articulation among the sub-units. Staff across the organization volunteer to fill in

anonymously an intranet questionnaire to voice their views about their work environment. “Mini” and annual versions are produced quarterly and annually, with 10 and 54 questions respectively. From 2005, unit CEO’s salary has been affected by the results of the climate evaluations.

Questions on the longer version investigate staff’s opinions about:

- Personal satisfaction with the work environment, mutual respect and the quality of work-life balance.
- The company’s prospects in the market, attitude to the environment, reliability and fairness as an employer and supplier.
- Perceived level of empowerment and space for creativity.
- Satisfaction with superior’s managerial style, local work structure, safety issues, and feedback channels.
- Satisfaction with salary and benefits, and opportunities for professional development.
- General sense of pride and motivation.
- Potential reasons for leaving the company.
- Open space for general comments about the company and the questionnaire.

## **Analysis**

### **a) Plasticity and Temporality**

While most respondents view the climate survey positively, there were a few criticisms about the questions’ applicability to every department. There were also references to the crystallization of the questionnaire, which has been the same for many years: at Semco, change potential is a basic criterion for the perceived legitimacy of any tool. Plasticity not only across space, but also time is essential in proving to its users the artefact’s role as productive and meaningful: at least at Industrial, the fixation of procedures is frowned upon as a bureaucratic exercise: power to determine the questions is just as important as freedom to suggest the answers.

Having said that, this tool also seems to pass the plasticity test. It gives a voice to every employee on a quarterly basis, incorporating open-ended questions to avoid

gaps. The active listening and responding to those voices has been incorporated in the organization's managerial processes, as CEO's end-of year bonuses are now directly linked to the unit results of these surveys.

### **b) Translation**

In spite of being one of the few instruments to function as an articulation point for all the units, it plays a poor role as a translator. The questions are not intended to convey specialist knowledge or to coordinate activities in any way, so the semantic and syntactic dimensions do not apply. Neither does the transformational concept: different bodies of knowledge are not being interwoven in the formation of new knowledge and new synergies – on the contrary. The fact that the results are collated by unit and posted for everyone to see may substantiate the corporation's openness, but the lack of discussion of results only strengthen the cultural chasm among sub-units. Contrasting percentages on the paper play, to a point, the “traduttore/traditore” role. No voices are being betrayed, in that they are all accounted for, but respondents' motivations are. Collated figures may represent and translate the voice of the individuals, but they do not provide an interpretation of the contexts and individuals' reasoning behind the crosses. Interpretation is left to the readers by the water cooler, who are free to apply their own frames of reference when attributing explanations to results: they may even be correct in many instances, but the act of translation of meanings and values hasn't really occurred. Local values, stories, enabling and constraining structures are not discussed or revealed. That sheet on the wall is mainly a static representation, a snapshot in time, susceptible to viewers' own theories. The most physically and temporally stretched tool that they have, then, is – unfortunately- a step short of helping them create the synergy they aim at.

### **c) Power Dimension and Symbolism**

Even more than in the case of the budget process, the (voluntary) enactment of this process consolidates Ricardo Semler's vision for his organization. For some, the questionnaire represents the black-boxing of his ideals, as not all new interests are necessarily being incorporated into the questions.

Still, while the tool has been criticized by some at Industrial as empty discourse “*to show that Ricardo Semler does evaluations*”, most respondents praise it, and therefore accept it as an example, or a symbol of what Semco stands for.

*“ It’s useful. It brings an important feedback, some important information, if people come to work motivated, what the level of noise in the office is like, how people behave....And, actually, it also generates behaviour changes...”*

At Industrial, the meaning of this practice has been fixed through time. In a company where performance and the bottom-line are declaredly a foremost preoccupation, this practice is mentioned by many as an example of their performance evaluation approach. Employee morale and trust in the organization have been problematized as essential for the company’s performance, with interest and enrolment maintained throughout the years. Perhaps, incorporating the survey’s result in CEO’s bonus scheme is a re-visitation of the process, and a way of ascertaining new-comers’ belief in the practice, and as a result, re-mobilizing membership in a more fixed way. Still, while that new membership is not guaranteed, the danger remains that the process is perceived in other units as meaningless, or an imposition on CEOs. Future outcomes of this annual process, in terms of level of staff participation, and potential post-evaluation transformation at top management level could reveal much about the true degree of corporation-wide enrolment and mobilization related to this tool. That would certainly be a worthwhile project for future research.

#### **d) Temporality**

It is quite meaningful that the staff has validated this process along the years - on a quarterly basis! Still, Star may be right in that boundary objects must be temporary. Here, it seems, there is already some indication that it is time to “de-crystalize” it if its legitimacy is to be maintained.



## **B. Human Resources Management Tools**

### **1. First Example: The “Integrated Selection”**

#### **Description**

The “integrated” selection process – locally dubbed “the integrated” - is an interesting example of an HRM tool as a “boundary object”. In principle, it should be used in all appointments made in the “Industrial” division.

#### **The Process**

- Phase 1: Initial technically-oriented interview and test, if appropriate, with pertinent technical staff, HR officer and future superior.
- Everyone who is expected to have any interaction with the post-holder is invited to participate in the “integrated” phase of recruitment, with a resulting interviewing panel of 10 to 12 participants, of all functions and hierarchical levels. Prior to interviews, they convene with an HR officer as a facilitator, to debate on the desirable post-holder’s profile and to establish the weighting of required characteristics.
- Applicants who pass the first phase are invited for an “informal chat” with the panel, one at a time (more than once, if doubt remains at the end of the process). The interview is normally light hearted and relaxed, as much as possible.
- After each interview, applicants are given marks, and at the end of the process, the panel votes on the final decision.
- This phase functions as a “cultural screen” and a pre-induction process.

#### **Analysis**

##### **a) Plasticity**

The tool passes the plasticity test, with reference to the unit as a whole. It is malleable to the needs of each individual or functional group being represented by the panel and it upholds the needs and values of the whole unit.

## **b) The Political Dimension**

“Enrolment” in the process is no problem – it has been legitimated by the local culture, and any appointments made without the “integrated” is regarded with mistrust – not necessarily for the appointee, or even for the appointer, but for the company as a whole. The failure to use the “integrated” is interpreted as a sign of decay in the company’s identity and erodes the employees’ belief in the company’s core values.

*“There you are: I wonder why it (the “integrated” procedure) has stopped. Is it lack of time? Is it this preoccupation with profit, with numbers? Is it because the market is bad? Is it the people, who are not so receptive anymore? Is it de-motivation? So, you have a lot of question marks to find out...Because, that was good. That was the moment that you accepted the person in your group. Now, it’s: ‘This guy is starting now, he’s gonna sit here, he’s gonna cover this other guy’s position...’ ‘Oh, fine, good luck’. In twenty day’s time, someone goes by and asks: ‘What does that guy do?’”*

The process is driven by the HR department and the pertinent department head, but they do not need to go to great lengths to create general interest in each specific recruitment process. The practice was once problematized around the idea of interdependence among staff and respect for the community spirit, and is now so crystallized among the “old timers”, that people see rotating participation as an essential task – an obligatory point of passage for a representative enough group. Incidentally, this is one of the situations where “fixed membership” would not apply. Each trajectory will attract a different group of people, depending on who feels affected by the new arrival: participation is perceived as meaningful and necessary, rather than as empty routine.

## **c) Translation: semantic, syntactic, transformational?**

The “integrated” does not really help in translating the local technical language or knowledge related to the function in focus, or that of any process participant, in spite of its name. Questions are normally geared towards everyday situations, personal values and attitudes, not technical aspects. Nor does the process result in the further coordination among the functions represented in the room. However, it succeeds in

predisposing participants to flex their everyday routines to help the newcomer: members of the interviewing panel have a personal, almost face-saving interest in making that person succeed.

*“So, when you started on your first day, you weren’t a stranger, and nor were we. You would want to know about things, information, and everyone is willing to pass it on to you, because everyone bet on you. So, that was important. Nowadays, there have been many people who joined the company, but haven’t been through that.”*

The selection process also exposes the newcomer to the local concept of empowerment: it teases out from interviewees a degree of openness that is not normally found in other interviews:

*“So, everyone could perceive that person. So, it’s a wonderful analysis. The person may have that beautiful demeanour, but when you start to joke around ...and you stayed there for 2 or 3 hours...In one hour, the mask would fall. It fell, and there was no way that you could keep your intellectual stance, just going through the motions”*

#### **d) Symbolism**

The “integrated” functions as a rite of passage into the community, a way of allowing staff to **validate** the newcomer’s membership – reinforcing the values and sense of belonging for all of the participants, and conversely, weakening the sense of brotherhood, of identity, if not used.

*A: “Well, it doesn’t go well....because if the person hasn’t been validated by the group, then the group starts to say ‘No, in that case I am not responsible for him” . So, that bond starts to break, but, in general, if the system is applied, it is good, you know, and in fact there are some people who joined through a non-participative process, but the Semco philosophy has always been participative, so...”*

*B. “It (the “integrated”) has a significant weighting in everyone’s climate evaluation. It brings the blue marks in the final result. I don’t know if other units have the “integrated” – well, probably they have other problems that bring red marks, beyond a mere recruitment process”.*

The final output of the trajectory is perceived as much more than just a recruitment decision. The appointed employee is seen as a joint project, and all of those involved in the decision take on the moral responsibility to make that project thrive.

#### **e) Translation: interpreters and representatives**

Certainly, the participation of staff belonging to different functions helps in bringing in the needs of different functions to the discussion, and provides a future bridge for the newcomer to access a variety of internal groups later on. There are, however, parallel acts of interpretation going on in the room. Interviewees are being analysed in their deepest values and worldview in every simple utterance or body move: for them, it is essential that the person fits into the culture and everyone in that room turns into a psychologist-cum-interpreter. Similarly, each participant is also exposing him/herself and the interviewee has a greater opportunity to visualise what working for that company really entails. More than anything, the “integrated” is a translation tool.

#### **f) Related artefacts and Temporality**

Prior to the interviews, the panels meet to decide on the nature and weighting of priorities, producing, as a result, an evaluation template to be used in each interview. It's flexible, negotiated and apparently temporary, as a new one is drawn in each recruitment process. Interestingly, it also represents the collective black-boxing of each individual's past experience in work relationships – issues brought out as priorities are no doubt based on their past personal experiences of positive and negative workplace interactions. Therefore, the “temporary” nature of that list is in fact, misleading. With time, as the same aspects crop up in discussion, the very practice of bringing them out functions as a crystallizing agent for characteristics and behaviours which the staff identify as being central to the company's culture – that modest listing, therefore, also functions as a sense-making device and a social conditioning element.

## 2. Second Example: Variable Salary Goals

### Description

The “variable salary” is an optional remuneration component that has been chosen by around 90% of the staff at Semco Industrial. It was introduced as a creative way to bring staff’s salaries to par with market levels, during difficult financial times. Staff opt for a comparatively lower fixed salary, but once a year they have the opportunity to have a lump sum equivalent to 3, 4, 5 or even 6 monthly salaries, depending on the person’s hierarchical level and choice of pay package. A profit-sharing scheme is also used and applies to all employees, but does not have the same financial impact as the “variable salary” scheme. In this scheme, employees will have the variable portion of their salary linked to the fulfilment of a pre-agreed set of goals, which, interestingly, must **not** be linked to the position’s existing description: the employee and immediate superior will agree on some sort of change which has not yet been incorporated in their standard job profile. People are being rewarded for innovating.

### Analysis

#### a) Plasticity

Initially, whether or not this can be an example of a boundary object is not very clear. The resulting artefact – the individual’s variable goals agreement – is, after all, only pertinent to one person. The negotiation occurs between superior and subordinate, not among several groups. However, at Industrial, individuals’ roles are normally extremely enriched and enlarged – each person often performs the role of a whole department, which results in their variable goals affecting whole functions within the company. Moreover, the practice has an integrating effect, legitimating and boosting staff’s role as change agents, guaranteeing peer cross-cooperation due to its high impact on personal income, and often resulting in the introduction and fixation of new practices in the long term, albeit often with unexpected outcomes.

*“...when you manage to achieve your personal target, in the long term, that has a high aggregating value for the company – but it can bring results in 5 years, when*

*you get your variable salary the following year, and, for you, that is a high value..  
...Only, for the company, that will generate ten times as much, say, in 5 years.”*

This is, therefore, an example of a boundary object that succeeds in remaining flexible to local needs, but also reinforcing the corporation's core values and interests.

### **b) The Political Dimension/ Representatives**

Control over the problematization phase can potentially lie with the manager or the staff. A clearer patterning of the power balance relating to this practice could only be well explored through researcher participation in a number of individual meetings. According to interviews, however, identifying the “problem to solve” is normally a negotiation process, in good Semco fashion. This practice functions as an open space for change: management can potentially use it to influence staff towards specific directions, while the individual has the opportunity to institute his/her own vision. Normally, each person has more than one agreed goal, possibly allowing for a combination of “vision owners”. Very often, the “goal” relates to the creation of a new process, or tool, which will affect others: the creation of a specific database, or a visual tool for reporting cash flow to lay staff, a new process of collecting overdue payables, or a new method of stocking replacement parts. In such cases, the individual is given the role of change agent, with the responsibility to interest, enrol and mobilize colleagues in the adoption of the new ideas. Independent of whose vision it was in the first place, once that goal has been agreed on, the staff takes on the role of representative. That in itself helps reduce all-round resistance to the idea: people discuss openly what their personal goals are and colleagues are keen to cooperate in reciprocal fashion, which facilitates an initial level of interest. Enrolment and eventual mobilization, however, have much more to do with people's perception of the innovation. Successfully achieved or not, one result can be counted on: each individual is given a “sandbox” to develop new ideas and an arena to practice his or her entrepreneurial skills.

### **c) Translation**

While this practice's aim is not semantic or syntactic translation, most of the examples mentioned in interviews involved both the improvement of understanding

among units, and coordinated action. For instance, easy to understand visual representations of cash-flow charts are now posted so that all staff is aware of how well the unit is doing: that tool creates a more accessible language to convey financial information to all personnel. Or, a sales proposals database has been created so that every sales person is informed of the state of affairs before visiting a company. That helps coordinate the work of normally highly independent sales engineers, in cases where more than one sales effort is in process.

Similarly, inter-group learning and joint knowledge transformation is not this system's main goal. While innovation is at the heart of this practice, it remains essentially an individual-driven effort. Still, it is a historically legitimated tool, which allows space for managers and staff alike to push towards greater cross-functional and inter-unit interaction and knowledge transformation. That, however, is not inbuilt in the system and will depend on strategic intent.

#### **d) Temporality**

These “personal projects” are also structured in terms of time, in that variable salary goals are set annually, and therefore the resulting innovations need to be introduced within one year, if the bonus is to materialize. The variable salary goal scheme, then, is a fixed structure that nevertheless can be populated by temporary objects – ideas that seemed nice at first, but that don't pass the test of time. They can even be introduced, but enrolment and mobilization are essential phases of the innovation's crystallization process, and lack of overall enactment can kill the idea: people can stop producing user-friendly cashflow charts and people may not notice it, engineers may stop inputting data in the proposals database, and staff may go back to the old method of stocking parts. People are unlikely to go back on being innovative, though: once an individual opts for the variable salary scheme, it is unlikely that they will return to fixed salaries. Operational innovativeness as a practice, therefore, becomes an irreversible process.

### **3. Third Example: The evaluation by subordinate**

#### **Description**

It is a very similar process to the Climate Evaluation Survey, but with application to specific leaders. Anyone with subordinates will be evaluated by them annually, through a 41-question long multiple choice questionnaire enquiring on respondents' perception about their superior's leadership style and effectiveness as a leader. In this tool, however, a follow-up feedback face-to-face meeting is expected to be part of the process.

#### **Analysis**

##### **a) Plasticity**

Given that a feedback session is inbuilt into the system, the degree of plasticity of this process is higher than that of the climate evaluation survey. As in the case of the climate evaluation, the fixed questionnaire is a representation of the leadership qualities espoused by the organization: questions are loaded enough to indicate to everyone what the corporation's expectations are. Still, when leaders discuss the feedback with subordinates, aspects of particular pertinence to each group's needs relating to leadership approaches can be discussed. Even if the questionnaire did not address all the meaningful issues, face-to-face interaction would fill the gap, and possibly lead to the transformation of leader, and even staff behaviour.

##### **b) Translation and the Power Dimension**

While the process does not involve the interaction among groups in any way, it aims at standardizing leadership qualities, as points of corporate articulation: by benchmarking leadership styles, they create the opportunity to cascade down desired behaviours that will result in greater cultural harmonization. Beyond that, the syntactic and semantic aspects of translation are not part of the tool's nature. To be fair, like the climate evaluation, it does reinforce the corporate discourse of empowerment, and therefore functions as a corporation-wide behaviour signalling system. Having said that, there have been references to cases where the feedback session did not take place with no further consequences, which shows not only that the "signalling system" may be failing, but also that its transformational potential is at



risk. Again, it would be an interesting line of investigation to compare how this process unfolds in other sub-units, and to explore the extent to which the signalling system pervades the organization.

### **c) Temporality**

The evaluation by subordinate is perceived as their main tool for performance evaluation, having outlived practices like individual appraisals and 360° feedback. With few exceptions, managers and staff perceive employee appraisals as redundant, preferring informal feedback and the achievement of role-related goals as well as variable salary goals as indicators of individual performance. The practice of the evaluation by subordinate not only passes the test of time, but it also passes the test of value: it is still seen as a meaningful, essential practice that must be performed on an annual basis. Invariably, all levels welcome the practice of evaluation by subordinate as a necessary systematisation of a procedure that is perhaps too awkward to occur unprompted and informally.

## **V. DISCUSSION**

### **1. A process, not an object**

Examples were treated as processes, rather than single stable boundary artefacts. Tangible artefacts are shown to be the result or part of a creation process, where representatives affect the creation, legitimation and fixation of mechanisms of articulation among communities. It is this paper's contention that every boundary object is indeed a process – even when the most salient component is a tangible artefact, such as a database or chronogram, or, in this case, a budget proposal or an evaluation survey. The term “boundary process”, then, would convey the concept's nature more accurately.

### **2. Plasticity**

Plasticity was at the core of all processes studied. Knowledgeable actors will only legitimate, reproduce, and possibly alter those objects that they can identify with and subscribe to from some sort of perspective: the object must function as a bridge for

the interplay of cognition, values, and action. That means, of course, that individual users' perception of the object is much more important than the object's format in its identification as a boundary object: a database, blue print, a meeting, a chronogram will fail in their role as a boundary object, if it fails in achieving an acceptable level of plasticity. In this setting, therefore, boundary object generation and legitimation processes are inescapably negotiated - having unexpected articulating effects on loosely-coupled systems. (see Spender and Grinyer's, 1996 and Brown and Duguid's, 1998)).

### **3. Translation roles**

The pre-requisite performance of different translation roles, however, is less clear. Not every object seems to perform all three roles suggested by Carlile, and it is my contention that they do not necessarily have to, in order to be classified as a boundary object.

#### **a) Semantic**

In the examples presented, none was particularly strong in their semantic potential, *i.e.* their ability to facilitate an exchange of technical knowledge and the dissemination of common technical jargon. Respondents were aware of technical differences, but, given their diversification strategy, did not feel the need to learn from each other, and few expressed the need to bridge that gap.

#### **b) Syntactic**

Coordination, however, seemed to be more important for a number of people. Semco has established some practices which are common to all units: they only use leading international "technology suppliers" for all units, embracing a "number-one" image, enriched by an all-round corporate ethics stance, and a "can do" attitude. Few units share common clients, but all of them benefit from the Semco/Ricardo Semler brand. Still, they want a stronger shared core. While initial attempts have been made for sales staff interactions, there is a clear call for "coherence" of image, and an ability to translate their core values into practices that are recognised as "Semco-esque" by employees, customers and business associates across industries, geographical areas, and, as a matter of fact, time. There is great preoccupation that time will "thin out" very strong core values and many respondents call for their fixation in a more

systemic way, even when they apparently shun the idea of corporate control. Most processes analysed here seem to have achieved just that, except for the “Semco Way” initiative, which is still working towards it.

### **c) Transformational translation and symbolism**

Interestingly enough, in Semco’s case, it seems that the fixation of syntactic, coordinating mechanisms can only occur comfortably if the pragmatic/transformational role of translation is fulfilled: it is inherent to Semco’s culture that procedures follow values, and not otherwise. While the budget, the climate evaluation, evaluation by subordinate and the variable salary goals all allow for a limited degree of operational innovation, that is not enough for the crystallization of new symbols that will function as corporate articulating points: only a company-wide dialogue such as the “Semco Way” can do that in a way that is perceived as legitimate by the staff.

Still, joint generation of uniform and coordinating practices will not be easy to achieve, given the geographical and industrial differences among the various units- which, at times, lead to distorted perceptions and attribution patterns.

Services industries have, by nature, a different concept of what first-class quality entails: standardization and documentation of procedures is essential for their ability to render their offerings more tangible to the client. Time and immediate response to customer needs take on a much more important role in achieving customer satisfaction. The end-product now has the client as a co-producer, with the result of even more blurred organizational boundaries. Certainly, the new “Industrial” already embodies many of these characteristics. The need for international accreditation leads them towards standardization and documentation of procedures, their “virtualization” – or working from home- scheme has inevitably been changing internal and external perceptions of time, and their divestment of manufacturing responsibility for a “solutions engineering” role has turned them, in essence, into service providers. Surely, they have much to learn from the other services-oriented units, and vice-versa – but that will not happen without bridges or tools that prevent distorted translations.

They all share a vision of quality, customer-orientation, ethical business approach and market leadership– but that is translated in different ways in different units. For instance, Industrial have democracy as central to their identity, attributing to that their ability to attract and satisfy customers. Throughout the years, certain practices and attitudes have become emblematic of their “true” identity. Relaxed personal appearance and office décor are symbols of freedom and respect for individual interests. Stories exemplifying communal spirit reinforce their self-concept of being a caring and engaged community.

Their professed respect for diversity, perhaps, is a major source of cognitive dissonance. They recognise other units’ market-related needs and practices, but at a deeper level, distrust arises if their core values or symbols are perceived to be violated.

Perhaps, then, beyond coordination, they also need the aggregating effect of new corporate-wide symbols, as existing ones have been weakened throughout time and space. As one respondent sees it, the Semco Way initiative is in search of those new symbols that can be inbuilt in the system across the organization.

The discussion on translation roles certainly remains open. The pragmatic, transformational role proves to be pivotal, but, it is particularly pertinent to this company’s culture and present challenges. Comparison to the case of other organizations will help reveal more generic patterns.

Still, this study has been instrumental in revealing the importance of symbols as constituents of boundary objects, either as an element of translation, or a role on its own. Symbols play a significant translational role: they help in the creation of a joint language, and also aid in coordinating and sense-making among different communities. A brand, a leader, an anecdote, a climate evaluation form: all of these and many other potential symbols help in different levels of translation, so it seems important that boundary objects are also considered in their symbolic role.

#### **4. Temporality**

The issue of boundary object durability seems to be treated in most of the literature from a power perspective: the irreversible fixation of one agent's metaphor over another's, or the legitimation of obligatory points of passage in the time-space continuum. The successful crystallization of certain objects, then, becomes emblematic of the interpreter's political dexterity. True enough in many cases, but not the complete picture. Intent and cultural idiosyncrasies also play a part in it, which explains why boundary objects are sometimes seen – and evidenced - as necessarily temporary, or, conversely, as the outcome of “epistemological closure” in a fixed, “black box” type artefact. Much more attention must be paid, I believe, to the intended translational results of each knowledge management effort: semantic, syntactic, transformational and symbolic outcomes require different degrees of flexibility in time as well as space, and therefore should aim at different degrees of permanence.

Translation of technical and operational meanings can be structured to a certain degree, with the use of glossaries, for instance, which is more that can be said for joint knowledge transformation. Still, cognitive learning and new knowledge creation are too dependent on the subject-matter, the balance between tacit and explicit components, individuals' knowledge base, environmental influences, frequency of time recurrence, interaction dynamics, and so on, for anyone to be able to generalize about the time specifications of any objects used to aid in the process. Therefore, the time configuration of any boundary process aimed at semantic translation and knowledge transformation must be determined by the interpreters in each situation.

Coordinating systems and structures, on the other hand, seem by nature to require the “black boxing” capability discussed in the literature – respecting, of course, the time scale of each task. Clearly, a boundary object can only become effective in its coordinating role if its structure – and incorporated time cues– have been legitimated and fixated into the company's repertoire of practices. Fixation and coordination will result from a satisfactory negotiation process, or, alternatively, through the acquiescence to internal or market/industrial benchmarks. While macro-

environmental forces do not pertain this study, there is clearly much scope for that area of research with relation to boundary objects.

“Fixidity” is even more essential for symbols, which only earn that status if they have survived the test of time - provided one is aware that symbols are liable to different interpretations, when trying to use them as bridges among communities.

## **5. Power and the Political Dynamics**

In many cases, translators will not only occupy a steering and possibly controlling role, but, sometimes they will “be” the boundary objects themselves, *e.g.* the “multipliers” in the “Semco Way” Initiative: here, the tangible artefacts, such as a budget document, an operational plan, or a contract are replaced by the multipliers themselves. The consequence is much greater potential for “unintended outcomes of knowledgeable agency” than the use of fixed artefacts would otherwise lead to. Using “multipliers” - and similarly, staff in pursuit of their variable salary goals- has been a symbolic act, which not only guarantees legitimacy to the change process and reduces any potential resistance to the exercise, but also reinforces empowerment as a core value. The result, however, may be a reduced level of control over the four PIEM phases. Clearly, the main driving forces are still the HR team, in the case of the “Semco Way” Initiative, or local leaders, in the case of variable salary goals, but they are happy to delegate control over the resulting metaphors. Independently of who acts as an interpreter, it seems quite clear that in knowledge transformation situations – or in the introduction of innovations, as discussed by the ANT model – interpreters can potentially play a major role in the shaping of outcomes.

In situations where black-boxing of knowledge has already occurred, interpreters are more likely to play a bridging role. In the case of the budget, for instance, unit CEOs and CFOs channel and negotiate their units’ views and needs with top management, rather than engaging in a political exercise aimed at shaping the budgeting process itself: they are populating the boundary process instead of designing it. Similarly, the climate evaluation and evaluation by subordinate have also been black-boxed in the shape of a fixed questionnaire. With reference to the climate evaluation, there is clearly a double process of interpretation involved, where the number of interpreters equals that of tool users. Collation of results, and therefore translation of staff views,

is pre-determined by the questionnaire's format, which means that no specific translators are involved. The interpretation of published results, however, is left to each employee's own frame of reference. In the case of the evaluation by subordinate, however, provided the feed-back session occurs, ambiguity of interpretation for both parties is eliminated through face-to-face discussion.

The significance of power dynamics in the effectiveness of boundary processes, then, is related to the degree of knowledge fixation and the intended translation roles. Still, Semco is a special case when it comes to matters of power dynamics. Their culture, by nature, espouses employees' right to change rules and structures as needed. This matter, therefore, will need to be explored further through studies in organizations where the "structuring power of agents" cannot be taken for granted.

## **VI. FINAL CONSIDERATIONS**

Much of Semco's change trajectory has been led by the Human Resources function, with HR tools and initiatives occupying a pivotal position in their cultural transformation. Noticeably, while this analysis uses largely a best-fit perspective, (see Boxall and Purcell's, 2000), Becker and Gerhart's(1996) idea of an overlap between "best practice" and "best fit" in HRM is more in line with Semco's present stage of development. Respondents believe that their flexible people management practices are a major factor of competitive advantage towards clients and business partners, but management also sees the need for greater systematisation of procedures. One result of that orientation, perhaps, is their pursuit of a joint venture with Exult, a major international Business Process Outsourcing services provider, who will have both internal and client-focussed management responsibilities in areas such as accounting, taxation, payables and receivables, payroll, benefits administration, and, more problematically, recruiting, training and development. That is bound to result in further internal friction, but their HR may also evolve into a multi-layered system with a boundary management role in the development of the cognitive, structural, as well as relational dimensions of social capital – see Nahapiet and Ghoshal(1998) for a discussion on these three dimensions, as well as Currie & Kerrin (2003) and Scarbrough & Carter (2000) with respect to the alignment among

human resources practices, knowledge and business strategy towards the development of human and social capital.

The problem of congruence will certainly remain. From Industrial's management point of view, their next challenges are not only to deal with the new dynamic relations with Exult, but also to be able to cross inter-unit boundary lines - possibly through a combination of boundary objects or processes – towards a new dynamics of knowledge integration and transformation, and perhaps, the synergy of values they are looking for.



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