

**TRACK 09:** The Philosophical Roots of Organization Studies and Organizational Practice: Epistemologies, Methodologies, and Approaches

**PAPER TITLE: VISIONS IN *SPD* PATHS FROM CIBORRA'S LABYRINTHS**

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# VISIONS IN SPD PATHS FROM CIBORRA'S LABYRINTHS

## Abstract

*This paper demonstrates the use in Social Practice Design (SPD) interventions, of Claudio Ciborra's phenomenology derived concepts in the social study of IS, while applying Rogers's attention points specifically addressing communication and relationship. In a large automotive manufacturer, CAR, interested in fostering the sustainable implementation of EES - a long introduced, company wide, experimental, enterprise system -, in the course of a EU research project, innovative model-based approaches are proposed and introduced to refurbish and provide new impetus to EES, furthering its implementation. The human centred, Participatory Design oriented, SPD approach, is proposed within the EU project, and partly deployed in the firm to facilitate the introduction of technology innovation, and organisational change. To allow success, SPD leverages Carl Roger's attention points of communication and trust relationship establishment, and Ciborra's phenomenology derived concepts from the social study of information systems. The SPD approach realised evolved through: a) establishing personal relations of trust with managers and personnel of the company, respecting Rogers' facilitator qualities; b) the analysis of, and the awareness-creation on, the main traits of the extant situation, through open conversations, meetings, and user workshops, with some EU research project staff as facilitators; c) the joint identification with the company's personnel of crucial how questions – e.g., how can we foster our mission critical enterprise system; d) the conception and co-production of visions of solution, enabled by Ciborra's concepts. The case is analysed in the paper by exploiting results of open conversation in user workshops, and of counselling-like sessions with the manager, and the data is discussed within the theoretical framework of the SPD approach - Rogers' and Ciborra's strongholds in particular -.*

*Keywords: enterprise systems, socio-technical infrastructure, social practice design, phenomenology, counselling*

## 1. Introduction

This paper describes experiencing with Social Practice Design (SPD) as a Participatory Design (PD) approach to the implementation phase of technology innovation. Its focus is on the use, in SPD interventions, of Ciborra's phenomenology derived crisp concepts on extant social issues, in need of solution in IS development and implementation (Ciborra 2002), while also applying, in the necessary personnel facilitation work, Rogers's equally crisp attention points on counsellor qualities, needed for trust building in establishing personal relations (Rogers 1951; 1967). Rogers' points are mainly used to address *communication*: establish and cure relationship, favour sense-making on the perspective of others, and the associated learning processes; Ciborra's points are mainly used as conceptual *archetypes* to help sense-making in the analysis of the organisational situation and context, and so help give rise to *visions* of solution to existing problems. Both types of points we consider to be elements of a *second order* level of concerns in interventions, the addressing of socio-technical 'functionality' being considered of first order in this respect (Jacucci and Martin 2008). While evidence for the validity of the use of Rogers' points in SPD is addressed elsewhere (Cattani, Calzà, and Jacucci 2008), in this paper we address specifically the issue of gathering evidence for the validity of the use of Ciborra's points in SPD.

## 2. Theory

### 2.1 Social Practice Design

SPD is a multi-perspective, evolutionary approach characterized by different phases (initial conversations, ethnographic observations producing tentative *how questions*, co-construction sessions producing consolidated *how questions* and *visions of solution*, implementation, evaluation), partly iterated according to need, the sequence of which being not strictly fixed (for an extended discussion on SPD approaches see: Jacucci 2007; Jacucci, Tellioglu, and Wagner 2007, 2008; Cattani and Jacucci 2007). The initial conversations phase consists in opening the process of interaction with users to capture their declared objectives and perceived problems. Together with ethnographic field studies, they constitute the *observational side* of

SPD. SPD intends to promote change, not just to observe a situation in the world: as in all action research, we try to change the world in order to learn about the world; and, we want to learn about the world, in order to be able to promote change. As a consequence, a further step in SPD – the *design side* to it - is the conception and co-construction, with clients' managers and personnel, of a *vision* for the solution of the problem(s) at hand. Facilitating solution in SPD explicitly includes support to people in letting emerge new work practices, and in co-designing supporting technologies. In particular, co-producing a *vision* is attained by jointly elaborating strategies and generating further meeting sessions with all concerned: i.e., *user workshops*, as well as *training sessions*, for all, including managers that will plan for, and moderate, change.

## *2.2. Epistemology introduction: Ethnography, Ciborra, and SPD as an intervention approach*

Social Practice Design relies on the ethnographic approach as a means towards critical conceptual analysis, and new concept emergence, as has been used for example by Claudio Ciborra, in his essay 'From Control to Drift' (2001). Ciborra discusses ideas, models and receipts coming from managerial literature regarding the construction, implementation and monitoring of corporate information infrastructures. The innovative concept of global information infrastructure is coined (large scale information infrastructures for global enterprises). It is said that the literature that faces this theme lacks of originality, proposing the same style of debate in the field of IS. In particular, the *vis critica* of the essay regards the concept of *alignment* between business strategies and information infrastructures. Strategic alignment in managerial literature means the matching between information infrastructure functions and business strategies.

The study of the concept of strategic alignment is for the author an appropriate context for questioning the status of the abstractions that are frequently found in management science literature and their relationship with what happens in the field. What is questioned is: *what happens when the various areas of strategy, organization and technology are connected in*

*the same geometrical representation? Do we have a new and better organizational performance?* The answer is *no*. Such a geometrical representation has a limited impact on the *primordial soup of anonymous practices and events* (De Certeau 1998) of the organization. This is because the knowledge and exposure to theories might not be enough to learn a new behaviour (Argyris and Schon 1996). In the author's perspective a representation that doesn't work, such as that of strategic alignment, causes a breakdown. It offers the opportunity for a different vision of the lived world of the organization. More tied to evidence, intuition, and empathy, than to the interest for geometrical models.

### 2.3. Relation between SPD, and Ciborra's social study of IS

Social Practice Design is a form of intervention research. It recognises the epistemological postulate that *we can learn about the real world only by trying to change it* (Lewin, 1946). The clue concepts of the SPD participatory design approach to intervention is that it addresses socio-organizational change by leveraging on two strongholds:

- the counselling-like qualities of facilitators, from the person-centred approach (Rogers 1959)
- the set of phenomenological-apparition-derived key concepts (Ciborra 2002).

In essence, and practice, performing the participatory design SPD approach includes, in addition to open conversations and ethnographic observation, two *visionary* phases, *en aval* of activities of improvisation and *bricolage*, two distinct, basic phases of the approach to innovating social practice, that are both deeply rooted in the two strongholds mentioned above:

- an ethnographic analysis phase to unveil, and let emerge in strict cooperation with clients, problems and resources in the area of social practice (the *how questions*)

- a creative design synthesis phase for developing, by co-constructing with clients, the social practice innovation (the *visions of solution*).

It should be emphasized that there is no presumed *universality* for the outcome of the design activity: the outcome is characterised by the fact that “*it could have been otherwise*”, e.g., with different designers, it always could have been otherwise. Not absolute or universal, but *relevant*. The motivation of SPD is an epistemological one, as in the words of Claudio Ciborra: “... *to challenge the overwhelming presence of positivism brings towards control ...*”. So, including practice as an object of design is not a sign of positivism. As Pelle Ehn was doing in the 80’s (Ehn and Kyng 1991), we like to construct fake computers with *shoe-boxes* to make users play with and participate. Co-constructed mock-ups, shared with users in user workshops, are good examples of positive outcomes of SPD activities towards sustainable design of people, computers and work. SPD has its own strategy in design, the one spelled out by Ciborra (2002): to put at the centre *human existence in everyday life*:

“The current description of the design, implementation, management, and use of information technologies in organisations are largely founded on notions of rationality, science, and method. This is probably because the initial diffusion of business applications of computers and networks, and the highly formalised nature of programming and software, suggested a vigorous and structured understanding and representation of the multiple systems practices, from requirement analysis to use, maintenance, and documentation. ... (we) attempt to engage the reader in thinking and articulating his or her practices otherwise. ... (we) put forward a significant shift from the scientific paradigm that looms large over the multiple facets of the introduction and use of information and communication technologies in organisations. In particular they point to an alternative centre of gravity: human existence in everyday life. Such a Copernican revolution is accomplished first by unveiling the hidden or dark side of information systems, or, to put it differently, focusing on the obvious, the workaday, and the very well known to any practitioner in the field. These are events, episodes, practices, and related narratives seldom hosted in the neat representations of systems, data flows, processes, entities, and relationships; rather they are made popular by the swapping of war stories among practitioners. Indeed, activities such as hacking, improvising, tinkering, applying patches, and cutting corners seem to punctuate ubiquitously the everyday life of systems.” (Pg. 1,2) “I suggest that the information systems field, with its rational views of knowledge, decision making, strategy, and orderly systems development, is based on a narrow model of rational, ideal

actors. In this book, by focusing on the mundane and the existential, I want to contribute to a transition of the field towards ...passion and improvisation; moods and *bricolage*; emotions and workaday chores; existence and procedures will become integral to systems design and use, casting new shadows and lights on the unfolding world of technology (in its deployment and management in organisations and society).” (Pg. 9)

SPD has two dimensions: it is a way to design, in addition to being an aid to design. In SPD we invent, we use our creativity to construct facilitating and training paths (open conversation, awareness raising, good practices, building of communities of practice, co-constructing) taking inspiration from many domains. It is an integrated approach, co-constructed by users, designers, managers, and facilitators, a path individual to them, strictly contextual to them, to the needs majeutically made emerge as awareness in first meetings, and then allowed to grow by co-construction together with sense making, newly appraised motivations and goals, accompanied and delimited, opening new fronts here and now.

Here are the guiding principles that are been considered as a help in proposing *visions of solution* for matching *how questions*, drawn from Ciborra (2002):

- *‘cultivating the infrastructure’*: *‘infrastructures are considered as always already existing, they are never developed from scratch, when a new infrastructure is designed, it must always be integrated into and thus be an extension of others’*;
- *‘riding drift’*: *‘ICT as an encompassing infrastructure can be looked at as the unfolding process of connecting and scripting, and a receptacle of moves (inventions, design, cultivation, modes of use) and constraints’*.
- *‘promote bricolage and hacking, rather than systematic method’*: *‘in designing a strategic application, do not limit to formulating strategy before the fact, based on a careful analysis, but allow competitive advantage to stem from the exploitation of unique, intangible characteristics, and the unleashing of innovative capabilities’*.

- *‘Hosting the novel IT with care and dedication’: ‘the notion of hospitality offers n opportunity to explore anew the complexities of designing, developing, and implementing systems in an organisation... a new constellation of issues, words, and understanding, referring in particular to existential dimension, such as life world, identity, and commitment ‘;*
- *Exploit ‘shih’: ‘ managers in high-tech firms ought to admit that their job in coping with the technological discontinuities is not to make decisions at the centre of a networked firm, rather is to tinker at the periphery of the pasted-up organisational platform they constantly enact’;*
- *Improving ‘mood’: ‘when we encounter the world in a situation, certain things, people, or circumstances matter; this ‘mattering’ is grounded in one’ affection; hence affectedness discloses the world as a threat, boring, or exciting; it sets the stage, shaping problem definition, solving, design, and action’.*

These concepts taken from Ciborra have been used throughout the research work described here as methodological guidelines to open attention towards the emergence of ‘apparitions’ (Ciborra 2002), to monitor their stemming out in conversations with personnel. Of course, apparitions are case specific, and in our data we are not looking for confirmation of Ciborra’s ideas. Recognizing Cborra’s concepts as meaningful interpretations, i.e., as kinds of ‘archetypes’ characterising the discourse of the company personnel, we confirm, rather, the value of the use of the phenomenological approach in SPD.

In sum, our interpretation of the data is centred on phenomenology (Odos), as is SPD itself: through conversations we have let emerge apparitions, and generated awareness on their relevance. Starting from these apparitions, company personnel alone - as domain problem owner - have generated *visions of solution*: we have only created the context for letting emerge apparitions, above the mere appearances.

While many of these concept-related apparitions will be seen surfacing in the conversation data reported below – proof of quality of Ciborra’s insight -, only one or two of them have in fact give rise to substantive *visions of solution*, developed by company personnel during the SPD

intervention process, co-constructed in counselling sessions with facilitators.

A note on notation: the specific occasions of emergence of Ciborra's concept-related apparitions in the conversations reported below will be indicated by underlying the relative portions of text, while explicitly indicating at the side the concept title, for convenience of the reader, and also reporting, for later reference, the appropriate number quoted in interpreting case data in Chapter 6.

### **3. The modelling use case scenario, and the company 'Experimental Enterprise System' (EES)**

The technology application studied in the present case, or *use case*, consists in a *model-based* (Wagner, Schmidt, and Jacucci 2008) upgrade of the company enterprise system in a car manufacturing company (here named CAR), followed during the 30 months of a EU project (here named MODEL). Main SPD activities in the use case are of kind *observation*, and of kind *design*.

*Observation*: field ethnographic observations of ongoing work with EES as well as of modelling sessions; observations concentrate on the use of modelling intended as a "substitute" of current consolidated document-based and EES-related working practices.

During ethnographic observations, descriptions of documents and practices related to EES as a central artefact of Target Setting Process (TSP) have been produced: the interactions between different parties and exchange of different kind of documents mediated by the EES, presenting the results of a light ethnographic activity on the use of EES carried out in CAR.

During the observation of modelling sessions, problems concerning the use of MODEL-SW modelling intended as a "substitute" of current CAR consolidated document-based and EES-related working practices emerged, providing an understanding the MODEL-SW modelling related requirements. In order to implement the work process associated with EES in an MODEL-SW model, a number of preliminary decision have been

discussed: where to start modelling, how to tune current and new modelling approaches, define how to decompose a document into a model, define the implications of migrating from a static to a dynamic enterprise view, manage access rights to enterprise models, and define how to import and export information from/to a model.

*Design*: the co-construction of *how-questions* and *visions of solution* with CAR personnel.

*Design* activities will be described in more detail in the paper, as this paper concentrates on the performance of *design* activities of the SPD intervention in the case. We start by introducing the use case scenario.

### *3.1. The modelling use case scenario*

A special focus in the *use case* scenario is on the Target Setting Process phase of car development. Inspection immediately revealed the centrality of an in-house, experimental Enterprise System software application (here named EES), used in the CAR group (CAR is here both the name of the auto manufacturing firm, and of the associated holding company, or group, that includes additional related companies, manufacturing respectively trucks (TRUCKS), tractors (TRACTORS), etc.). EES is used to manage the integration and the performance of all vehicle systems and parts (the so called ‘tuning of products’ activities) and support the concurrency.

Along the entire development of the vehicle, there is a document that contains the entire history of the product: the SOR or Statement Of Requirements. This document is created at the beginning of the development process (thus it represents the input of the Target Setting Process), and during the process execution it is gradually filled and completed. TSP starts just after the company decision of developing a new vehicle. Therefore, the SOR contains, at its beginning, some necessary information - mainly constraints on the new product definition; as the maximum engine power; the market sector in which it will be placed; the product range; the maximum price of the final product; and so on. Actually the SOR is a collection of heterogeneous documents. The SSTS (Sub System Technical Specification) is one of the most important elements of

the SOR, because it contains all the technical details required for the internal product design as well as for the external supplying of the parts that will be outsourced.

### *3.2. EES and MODEL-SW*

One implementation issue in the project has been the need to manage the interoperability, both from a technical and from social point of view, between the model-based software application (here named MODEL-SW), used in the modelling approach in project MODEL, and EES. While several project deliverables described the role of EES from a technical point of view, and demonstrated how technical interoperability issues between the two systems have been solved, this paper here addresses how SPD attempted to tackle organizational, motivational user problems facing the application of a generalized MODEL-SW modelling approach to the current working practices and systems, involving some EES users, developers and managers.

Opportunities of use of the MODEL-SW modelling as an extension (not a substitution) of current Target Setting practices have been co-constructed with EES managers, users and developers. MODEL-SW modelling has been proposed in this context as an EES support in connecting all actors involved in the CAR design process (6.2 Cultivating the infrastructure) (suppliers and others) together.

While the EES resulted as a winning cross-organizational enterprise system (spreading from CAR to its associates in the holding, that is from cars to trucks and tractors manufacturing), it seemed not being equally successful as a consolidated pervasive practice within the single organization's different actors (production, marketing, suppliers, post-sales areas and their personnel). This dimension, although being the target of socio-organizational attentions by CAR people, as emerged by the interviews, still lacks a coherent technological solution. In this respect, MODEL-SW modelling finds its role, and the vocabulary in which it can be predicated.

#### 4. Open conversations with the EES manager

We briefly report here only part of the outcome of counselling-like open conversations, uniquely with ML3, the EES project manager. These conversations concentrate on: EES, its genesis, different perspective phases in its development, its features and problem issues, managers' view on it, the struggle between ICT versus process views, and power struggle - system versus process and company -, and the use of the UE project. The co-constructed strategic 'architecture', facilitated during the interaction, consists of *visions* based on Ciborra's concepts of:

- *cultivating the infrastructure* (letting emerge the opportunity/need to include model-based approached onto the existing EES, rather than starting a completely new and different ES project),
- *shih* (enrolling upper management, for anchoring the project in the company, by including their detailed strategies into the model-based, upgraded EES).

*"... EES is already a proper enterprise system. Wanting to introduce a model based enterprise system in CAR, we should modify EES making it model-based, rather than attempting to substitute the EES implementation project - with its already created digital-type barrier in the company -, with a completely new one, before even its completion ..."* (6.1 Cultivating the infrastructure).

*"At the beginning we considered the production process, then software modules for particular services. Our intention has been immediately of activating different functionalities. EES has been born as a single block, then, reasoning in terms of several companies, we have carried out the adaptation to different companies (first moment)...In a second moment we have added other functionalities, dealing with other company activities: production, after-sale, services. Eventually, these functionalities should be correlated among themselves ... (6.3 Riding drift). Now it is not like that: for example, repairing, if there were linking with production, it would be better, the whole know how generated in design would be made available in a different format during repairing...Client information, problems, recording onboard the vehicle, how could we reuse them to improve project quality..."*

*“We should distribute EES designers onto user groups for dedicated local care and adaptation of the work oriented information infrastructure...” (6.6 Promoting bricolage)*

*“As for our vision, we are working still with the vision of the EES born 6 years ago...we proceed adding additional processes, clients provide information from new processes. It is a loop, it must be understood and managed, all languages must be coherent. Must link the whole into the one vision produced, we go by force towards models, unavoidable collecting all information, how they interact, how they are linked. An extremely long work, we are just started, but this is the direction. Isolated parts to be integrated: physical test, must become a workflow test request – result. CATNET: each company in CAR has its own, that must be integrated into EES. EES defines the technical parameters, and tells you how the test should be made. We have a physical experimentation, and a virtual one, and, there is the client experimentation: for example users provide an evaluation on panels.”*

*“Suppliers, is the single most important missing piece, 50% of the design is still left out of EES, suppliers are not being managed into the flux, documents get lost, for some branches of the tree there is nothing. Then: integration with the system to carry out failure mode analysis: the preventive analysis of failure: building the table of possible failures, compiling reports – in the field of aeronautics, but also of auto – a sacred piece for after-sale, for repair, take the car, how can we do this in complete isolation, in a way which is not linked to the know how of the car. This is of recent interest, the analysis of defects after-sale, it indicated critical components in the sold, to improve the quality in the manufactured. Take CAD: it is managed in the company by the PDM system, a closer link would be needed, e.g., for recording the CAD version used, but the problem is not perceived enough. On client test we said already, on the prototype, at the end of the story it has a life of its own, important to integrate them in, the information of first lots produced.”*

*“Upper management has started to understand the issue, allowing the deployment of a system of such huge dimensions to capture the know-how of the company. (6.5 Exploiting Shih) It is clear that this vision, based on models, on components that talk to one another, still escapes, quantify the advantage is difficult...”*

*“EES is born in CAR on public financing (luckily, otherwise the money would not have been found), 7 people working on the project in the last 5 years. We went to a top ICT manager, saying: we have used your process, but rather than going on employing excel sheets of different format, difficult to monitor, we provide you with the system, a bit more than a structured power point. He said yes, provided financing for year 2002, we started. With only one problem: he saw it all in power point, and expected the whole system done in 4 months, but it was only a mock-up. There are two big issues: building the system, and gathering the whole widely spread knowledge to be put in it. In two months the system existed but its knowledge database was empty. We said, every one will fill it its bit, in one year it will be done, but there was no coverage of the whole model. But EES is also something else, there is the concept of standard, a new model, it is interesting to see how managers realise that the system is something that allows them to reorganise the company knowledge, diffuse it, make use of it. To TRACTORS we say: there are functionalities, we ask you to define your expectations on tractor functionalities, etc. The AD pushes: EES structures the company know-how pushing everyone to do things in a given way. Top management is getting it, is getting there, many use it, each thinking to it in its own way, it is a mechanism...”*

*“How do we face the organisational problem: we meet people in their various workplaces and we ask them what they need. Now and then the process breaks down, and PSI is not used yet. As PSI provides important info on where we are in the process, piece by piece, we say: we provide to you the report of PSI, if you have received a hand made report, and this does not correspond to PSI, stop: the system is not working correctly ...(6.4 Hosting the novel IT) We need a push from above, the system must be used, some more some less, but all must use it. Otherwise the system tells you that it does not have your information in input. This is the right strategy to face this problem.”*

*“In TRACTORS, SI asks: how do I link performance to component. EES developers are not IT designers, are process people. On this we have come into conflict with the IT department of the company. PSI for them does not exist. They wanted a PDM. We don't want to have anything to do with the concept of an IT person, but process person...we should network designers onto a community of practice, and care for their career and continuous training, while involving users into IT infrastructure implementation practice and control (6.7 Improving mood)... At the beginning I have antagonised them, but for the after-*

*sale issue I have gone to them, I have spoken to them. I have also wondered why are the IT people in the company all the same, all trained in the same way, while at the organisational level people have a functional dependence from a process responsible: they are two separate sectors...These are just power games: on the one hand the organisational part must be made by project, the case of business information technology; then the AD comes along saying that this group is no use, we take its leader and we put her under the ICT head, but she blew up: "I am a process person", she refused to depend from the ICT head. A view reducing everything to the concept of a system, versus understanding the company... Upper management thinks that EU projects are useless. We think that EU projects do not push you out of path, it may not provide you with the solution, but it provides you with ideas and pieces, if we do without this then why not calling our division services, rather than researches...We have to revise the architecture. EES was born as an enterprise knowledge management system. Then we understood that it was necessary to take a process perspective. EES must be constituted in a process perspective. We will face this issue next year, MODEL is fundamental in this respect, framing methods and knowledge. Models bring along conceptual power. It would be nice to have a next EU project to do it: make a revision of EES in a model-based perspective. Now we have all the roles of who does what, all the different phases of operation, we can take this vision and make a link to the software..."*

## **5. Interpreting Case Data**

In Section 5.4 it has been shown how, in conversation with personnel, we discussed and modified the tentative set of *visions of solution* co-constructing and consolidating them, to the co-constructed *how question*: "*How can we further develop and successfully implement our enterprise system EES with model-based approaches to integrate the interactions and negotiations with our suppliers?*"

We can see that conversation data quite spontaneously offers *apparitions*, on the base of which appropriately corresponding guiding principles from Ciborra (2002) prompt *visions of solution*. Let's list here below outstanding pairs: *apparition* → corresponding-principle: *vision*.

### 5.1. *Cultivating the infrastructure*

“... EES is already a proper enterprise system. Wanting to introduce a model based enterprise system in CAR, we should modify EES making it model-based, rather than attempting to substitute the EES implementation project - with its already created digital-type barrier in the company -, with a completely new one, before even its completion ...” → ‘cultivating the infrastructure’: *do not give up the installed base, rather promote its further development and implementation.*

### 5.2. *Cultivating the infrastructure*

“MODEL-SW has been proposed in this context as an EES support in connecting all actors involved in the CAR design process” → *Tactics of Cultivation*: (From a vision of MODEL-SW as a substitute of EES to a vision of MODEL-SW as an extension of EES) the old-the installed base-heavily influences how the new can be designed: infrastructures can only be developed through extending and improving the installed base; the model-based customizable workplace viewed as a *gateway device* linking otherwise incompatible systems as MODEL-SW and EES.

### 5.3. *Riding drift*

“... In a second moment we have added other functionalities, dealing with other company activities: production, after-sale, services. Eventually, these functionalities should be correlated among themselves ...” → ‘riding drift’: *allow new objectives/functions enriching EES.*

### 5.4. *Hosting the novel IT*

“... how do we face the organisational problem: we meet people in their various workplaces and we ask them what they need. Now and then the process breaks down, and EES is not used yet. As EES provides important info on where we are in the process, piece by piece, we say: we provide to you the report of EES, if you have received a hand made report,

and this does not correspond to EES, stop: the system is not working correctly ...“ → ‘hosting the novel IT’: *with care and dedication for EES.*

### 5.5. *Exploiting Shih*

“... upper management has started to understand the issue, allowing the deployment of a system of such huge dimensions to capture the know-how of the company ...“; “... the restructured model based EES vision is revealing a successful initiative to tackle horizontal standardization issues and replicate the system across different manufacturing contexts better than any off-the-shelf generic enterprise solution, large improvements opportunities are still there to develop a vertical standardization strategy. The CAR vision is now towards connecting all development activities that are currently unrelated (post-sales services and customer information). The role that is emerging for MODEL-SW modelling in this context is to ... furnish customized interface for all the actors working with different knowledge on the car value chain (especially suppliers, that own the 50% of the production effort)... The modelling rationale can fertilize the EES logics extending it with model-based customizable workplace views....” → exploit ‘shih’: *integrate top management strategies onto EES.*

### 5.6. *Promoting bricolage*

“... distribute EES designers onto user groups for dedicated local care and adaptation of the work oriented information infrastructure ...“; → ‘promote *bricolage* and hacking, rather than systematic method’: *look for ad hoc solutions, rather than for abstract top down approaches.*

### 5.7. *Improving mood*

“... should network designers onto a community of practice, and care for their career and continuous training, while involving users into IT infrastructure implementation practice and control.....” → ‘mood is all important’: *improving the mood of relevant personnel.*

## 6. Contributions To our knowledge about IS

In this study we have seen how the two basic *visions of solution* co-constructed by personnel are simple instantiations of two Ciborra's concepts, within the case:

- 'cultivating the infrastructure': *do not give up the installed base, rather promote its further development and implementation.*
- exploit 'shih': *integrate top management strategies onto EES.*

In conclusion, facilitators are encouraged to inspire their *visions* on Ciborra's concepts.

From reflections on this case, we have provided evidence about the suitability and application of SPD as a research intervention method, and in particular of the use of Ciborra's crisp, phenomenological *apparition* based concepts, or principles, in supporting interventions of IS development and implementation towards success. The contribution of the paper resides in how interpretations and findings complement with practice based evidence our knowledge about the use of Ciborra's critical conceptual work.

We judge the quality of the SPD research intervention approach in the case, by three requirements (Baskerville and Myers 2004):

1. - a contribution to practice:

the action: *in the MODEL project, CAR group users were able to voice their need for, and designed, a path towards building a new model based EES instrument, with a different philosophy, which went beyond what the designers had thought)*

2. - a contribution to research:

the theory: *Ciborra's concepts are found to provide correct phenomenological lenses to understand and guide implementation projects of IS in enterprises*

3. - the satisfaction of pre-set criteria by which to judge the research:

satisfaction: of company manager, personnel, and facilitators/researchers respectively, for change produced and results obtained.

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