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THE MATRIX: TECHNO-HUMAN ACTORS AND SPECIAL EFFECTS AS A VEHICLE FOR IS RESEARCH DISSEMINATION

Research in Progress

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Abstract

A variety of theoretical foundations and methodologies populate the IS field of research. At odds, there is a general uniformity in the ways of presenting the outcome of research. As a result, traditional empirical research structures and wording may inadequately convey research results to the relevant audience or undermine the potential impact of IS studies. To overcome such limitations, alternative genres of research are sought. In our paper, we posit that albeit narratives and ethnographies have been somewhat applied in IS, a promising genre is offered by modern cinematography, as popular movies and their screenplays can offer an understandable and yet explicative frame to discuss IS related issues and to develop a sort of situated knowledge and critical observation. We offer an example of this representation analysing the information infrastructures and sensemaking processes by means of the popular movie “The Matrix”.

Keywords: alternative genres of research; artefacts; IT alignment; movies.

1 Introduction

Research presentation and publications are certainly vital to disseminate and share knowledge that stem from scholars' research activity. The field of Information System undoubtedly makes no exception. More than other fields, though, IS conveys peculiar challenges for scholars for at least three reasons: a) it is relatively young compared to other fields of study (e.g. Avgerou, 2000); b) from its inception it has been influential on practice, drawing from and developing new insights on the management of information infrastructure in organizations (Davis et al., 2005); it conveys a variety of theoretical foundations and diverse theoretical constructs, which has prevented IS from being considered scientific in an orthodox way (Banville & Landry, 1982) and being capable of generating cumulative knowledge trend (Benbasat & Weber, 1996).

Although a general consensus may be found on the structure of research papers, a mounting debate on alternative genres is flaming not only the IS field of study. It is widely acknowledged that “research papers are by necessity structured in a linear fashion; the research 'data' gathered is unitised and categorised to a greater or lesser extent; reductionism is present in that choices have to be made as to what should be included or omitted; some explanation and interpretation of the findings will be included, implying some degree of cause-effect” (Fitzgerald & Howcroft, 1998, p. 318).

Nevertheless, several authors have more recently fed the discourse on alternative genres of IS research. Displayed in the Author Instructions webpage of the European Journal of Information Systems, Rowe's editorial on diversity of genres in information systems research offers an interesting categorization and authoritative guidelines for a richer diversity of genres (Rowe, 2012). The need for a more detailed taxonomy of research genres has been widely expressed (Nickerson et al., 2013; O'Keefe, 2003). Whilst research papers prevail in IS related publications, Rowe's taxonomy includes also Ethnography/Narrative; Literature Review; Theory Development; Research Essay; Issues and Opinion; Response; Editorial; Guest Editorial as possible genres in IS research (Rowe, 2012). Rowe had already pointed out the necessity for more diversity in Information Systems research genres. He furthermore stresses the importance of higher representation of less disseminated genres. Besides literature reviews and theory development, Rowe refers to narratives and ethnographies as the techniques that allow for a description and in-depth analysis of real life situations. These have a high potential in the IS research field as they capture the underpinnings of technology in use and how social interactions may forge technology, as for example in structural studies (e.g. Orlikowski, 2000); in action research (e.g. Baskerville & Pries-Heje, 1999); or in ethnography (Schultze, 2000). They may well have a room in the "positive design" of information and organization, as a perspective on design that is concerned with human-centered design (e.g. Avital et al. 2009).

Narratives in Social Research have been widely used as they tell stories about the social dimension of organizations and focus on humans and collective actions (Elliot, 2005; Franzosi, 1998). In the IS field, narrative as the result of story-telling is at the core of the debate about relevance of IS research, especially in ethnography (e.g. Myers, 1999; 2013). Narratives are powerful in accounting for the interplay between technology and organizations (Boland & Schultze, 1996), as they allow researchers to unfold the social process of technology adoption, usage, and management (Hyvarinen, 2008).

Anecdotal tales have also been used to convey in research paper the authors' own experience of the conduct of research (e.g. Fitzgerald & Howcroft, 1998). The proposed caricatures have a moral in that they are intended to sustain the researchers' arguments and understanding of the phenomenon under investigation. Moreover, they have an explicative power that ease the communication of complex organizational dynamics to the wider audience of readers (Damsgaard & Marchegiani, 2004).

Alternative genres of research may as well fit rigour vs. relevance debate (Robey & Markus, 1998), which has flamed top IS journals and conferences (Benbasat & Zmud, 1999; Davenport & Markus, 1999; Wainwright, 2000 *inter alia*). Indeed, unconventional ways of presenting IS research offer a fresh look at IS related issues and may evoke new insights that can further feed knowledge development in the field.

IS failures is one of the themes that better envision the integration between technological aspects of IT and social and behavioral issues. Authors in the IS field has widely investigated failures in IS

implementation within organization by means of social construction of technology (Mitev, 2005; Orlikowski, 2000). Giving voice to the different actors involved in the process of social constructivism may lead to multiple narratives (Bartis & Mitev, 2008). This way of presenting the research results allows authors to account for multi-voiced perspectives of reality and to highlight the contradictions and conflicts between interpretations across actors.

Digital technology in audio-visual may provide effective evolution of narratives as a research genre. As creative industries have become more pervasive in modern economy and in everyday lives, we argue that an effective way of communicating IS research is that of borrowing narratives and genres from the movie industry. Comparing screenplays and fictitious plots to more traditional narratives could in our vision offer new insight on how to present research findings and tight a communication channel between theory and practice. Moreover, it can provide the setting for testing the different realistic situations that may arise in everyday organizational lives. This could in turn lead practitioners and researchers alike to empathize with IS related issues.

1.1 The choice of the movie: The Matrix

The movie “The Matrix” (1999) has certainly set the stage and defined a disruptive genre in the history of cinematography. From a scenography viewpoint, it provides a vivid example of the structure theorized in the seminal works on comparative mythology by Campbell first (Campbell, 1968; 2008) and later Vogler (1998). “The Matrix”, both in its original version and in its sequels – “Reloaded”, “Revolution”, 2003), opens with an epic teaser and then follows the twelve steps depicted in Vogler’s hero’s journey (Bencivenni, 2009; Lavandier, 2005): a) the ordinary world; b) the adventure begins; c) the denial of the call; d) meeting up with the mentor; e) crossing the first door; f) trials, allies, enemies; g) approaching the mysterious cave; h) the supreme proof; i) the reward; j) the come back journey; k) resurrection; l) spreading the message to the world.

2 The supportive information infrastructure

The concept of corporate infrastructure has emerged during the 1980s as a consequence of the growing pervasiveness of the (locally based) information systems and the rising exigencies –if not a real human expectation spoiled by habits- of having common technological standards as enablers for inter-operative functional applications. “*The Matrix has you...*”: the information infrastructure is the world for Neo (the protagonist) and his fellow inhabitants. The typical representations of the information infrastructures may refer to different metaphors: as a pyramid (Weill & Broadbent, 1998) or as multilayered systems (Hanseth, 2000).

According to Weill and Broadbent (1998), the pyramids are made of a base (shared IT components) upon which the human IT infrastructure (people, skills, etc.) could made use of shared IT services and

applications. In “The Matrix”, these layers could be identified as, respectively: the phone lines through which the communications occur, the components of the virtual world that “The Matrix” itself represents, the Agents, meant as the ultimate stabilizers of the overall systems. From a systemic standpoint, the agents might be considered as the main defence towards both the external threats (similarly to the anti-virus software) and toward the overall possible entropy of system. In a world made just of information, the ultimate dope is made of pieces of “alternative information” smuggled and sold by dodgy pushers.

The model proposed by Hanseth (2000), rather than on components, focuses on the enacting technologies and the ways in which they could rely on communal (shared or compatible) standards while yet connecting heterogeneous entities. As Ciborra and Hanseth (2000) recalls “*the differences are not just in the ways of representation. They are more profound. There is another perspective...*” (p. 16-17) which is compatible with the characteristics of the “The Matrix” infrastructure: openness, multilayering, inertia. In fact, the first relevant aspect of “The Matrix” infrastructure is its “openness”, meant as the difficulty in delineating the contours of the infrastructure. The idea of the pyramids, instead, implies that the boundaries of the infrastructure are always clear and visible (except for the external layer of the so-called public infrastructures to which the corporate infrastructure might be connected). The infrastructure of “The Matrix” seems to be open as it can be viewed as multilayered, in the sense that a wide range of heterogeneous devices (PC, servers, switches, I/O peripherals), support the diffusion of the critical resource (the information), applications and software that (should!) satisfy the users’ needs, network and transmission standards, as well as the people who embed the information in their sensegiving and sensemaking processes (Weick, 1995). In the sense, the presentation of Trinity to Neo clarifies the ontological difference between information and the truth. So, for an employee of a software company (Neo) in a IT ruled world, the seek for the truth goes beyond the retrieval and elaboration of more information. And only when Neo, considered the “elected” by Morpheus, the head of the saboteur of the established system, received an out-of-system phone the different standards show the common roots interlacing the official and outlaw worlds. Hence, in the whole movie the interface looks more and more as a multilayered entity with shady contours rather than a cohesive and bounded pyramid.

The last characteristic of the Hanseth’s information infrastructure (2000) is probably the most fascinating one, if read through “The Matrix”: the inertia. The inertia, in fact, appears to be the dark side of the positive feedback of the standards reinforcement mechanisms described by Grindley (1995) (Hanseth, 2000). In details, recalling the analysis of the positive feedback of standards as the central element in the information economy made by Shapiro and Varian (1999):

1. Network effects and network externalities, visible in the fact that the artificial world (the Matrix itself) benefits from the existence of the common infrastructure in which humans, technologies and other resources let their lives go on and develop. If platforms and actors are stable, solutions can be literally inoculated in the deviant parts of the systems, as in the crude scene in which Neo is

interrogated and brutally healed (for the sake of symmetry, he gets lately purified in a similar brutal manner);

2. Path dependency, related to the ease of conducting incremental innovation of “paved” information roads. For instance, the proliferation of Agents (particularly visible in “The Matrix-Reloaded”) make it visible that clonation appears to be the fastest and most efficient way to create new solutions; the enhanced power of Agents in the “Reloaded” mirrors the delusional power of incremental innovation; the technological development seems to be dependant of paths: counterintuitively, even the Oracle –the maximum spiritual leader in the hacker community- helps the newcomers find their path;

3. Lock-in effects, and the related switching costs and coordination problems: “Blue pill or Red pill” (quoting the Alice’s Dilemma), the comfortable solution of the discarded blue pill would have kept Neo in a consistent world of self-reinforcing mechanisms in which all the objects show a steady materiality. The red pill, instead, throws Neo in an underworld of darkness in which even the organic matter (i.e. human bodies) could keep different shapes and solidity.

The above recalled phenomena are clearly visible in the movie, as well as the possible inefficiencies related to the fact that a larger installed base could award the second-best as the winner a competition based on the affirmation of standards. In fact, the solutions developed by the Morpheus’ gang appear to be more powerful, more efficient and way more close to the human nature and its patterns of interactions.

2.1 Actors and strategies

“The Matrix” is also a clear example of the strategies described by David (1987). To begin with, the concept of the “narrow policy window” is pretty dominant in the movie. In fact, both the hacker/pirates operate through raids under the assumption that the effectiveness of the interventions is limited in time (of the same nature are the preservative actions by the patrols). Furthermore, the adoption of the Actor-Network Theory as theorized by Monteiro (2000) and the creation of IT/human artefacts (Monteiro, 2000; Bolici & Giustiniano 2013) enable the identification of some specific typical characters as:

- Blind Giants, generally intended as agencies and entities having the power to influence the future trajectories of network technologies. “Actors whose vision we would wish to improve before their power dissipates” (Hanseth, 2000, p.68). The most blind giant is the Matrix itself, being grown so big to have problem in tackling the inner instability of the system itself; in fact, the self-reinforcing mechanisms of its infrastructure seem not to catch up with the growing need for the necessary energy to nurture it. Nevertheless, even the Council that lead the revolution, shows some intentions in keeping the vision in fighting the established system. In being like that, from a mere decision-

making perspective, the orthodox side of the Council and the Architect seem to be two sides of the same coin.

- Angry Orphans, group of users whose routinized technologies got changed. In “The Matrix” the early reborn Neo is probably (maybe paradoxically) the saddest orphan, living awkwardly in a kind of a second life in a world that he is still missing in its fascinating consistency. Even more paradoxically, the kind-of-Sabbat party of the outlaws appears like an ultimate claim for the existence of the Matrix: the defeat of the ever enemy would probably vanish the brotherhood that glues together very heterogeneous folks. For sure the Agents and the other several defenders of the Matrix (martial art fighters, the brothers, etc.) are the by-definition angry orphans, moved fiercely by the threats of seeing their established world vanishing, and with it their own existences;
- Gateways. The “key maker” is probably the most picturesque character of the movie, being the personification of the links between different parts of the networks and the ultimate crafter of the artefacts (“the keys”).

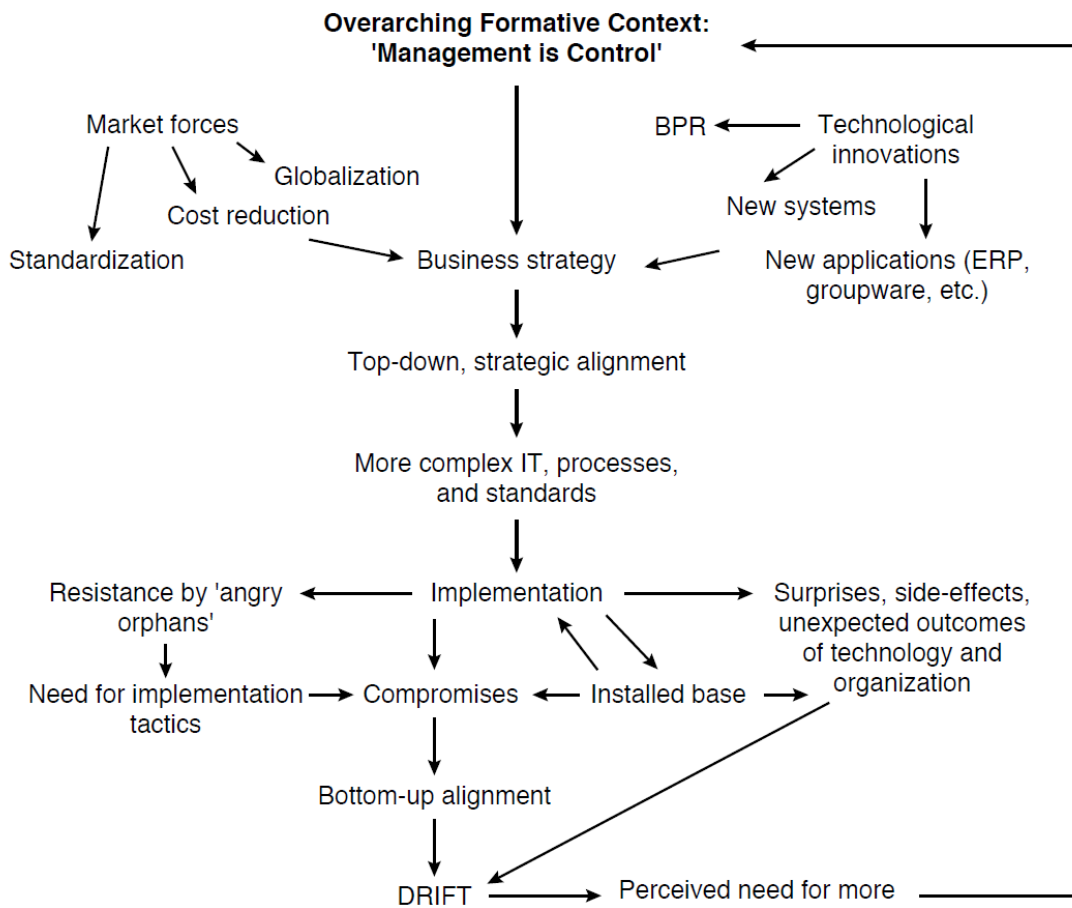


Figure 1. Mapping the dynamics of infrastructures.

Source: Ciborra and Hanseth (2000), p.4.

3 Reflection

The choice of this alternative approach to narrative aimed at illustrating the dynamics underlying Fig. 1 without describing it beforehand. Reconciling the script of the movie with the theoretical concepts has an evocative potential that helps readers develop a sort of situated learning. As in the case of the implementation of drama on the IT adoption (Avital & Vandenbosch, 2000), our analysis of the movie setting and plot not only conveys figurative understanding of the interactions between humans and technology, it also express a generative power in stimulating further development of the theoretical concepts.

The ultimate drift (“the system” failure) is in fact the outcome of a search of a growing control under the illusion that “management is control” (Ciborra & Lanzara, 1994). The sense of disillusionment is amplified by the empathy with the characters and their actions.

Further, the fact that old-fashioned motorbikes give Neo and his fellows a way out confirms the idea that human improvisation, problem solving and unstructured creativity could fix IS problems with a touch of (very) human “bricolage” (Ciborra, 1998). Readers, as well as audience, is stimulated in envisioning their own behaviour in similar contexts.

Finally, the symmetry noticeable in both the opposite sides does not have to be necessarily considered as a paradox but yet as constant trend in the human-machine interaction (Zuboff, 1988), notwithstanding the final aim of the actors.

We believe that the effectiveness of using movies for academic purposes rely on at least three conditions that the researcher(s) should master: *i*) a clear theoretical framework to be applied; *ii*) the selection of notorious and widely appreciated movie; *iii*) the ability to integrate the theoretical framework with the topical scenes and passages of the movie. Given these conditions, we believe that the movie industry offers a fresh and promising avenue for academic IS environment. Like in drama, it fosters critical observation and stimulate individual as well as collective sense making processes and experiential learning (Avital & Vandenbosh, 2000). Moreover, this exercise may feed a virtuous cycle that in turns stimulated integrative knowledge accumulation.

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