Breaking the Glass Ceiling: Levers to Promote the Influence of Human and Organizational Factors in High-Risk Industries

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Abstract A growing gap is emerging between the increase in human and organizational factors (HOF) expertise and the success of HOF operational approaches, and the rather weak influence of HOF at the strategic level of organizations. This chapter seeks to understand this paradox and identify some levers to promote HOF influence. We assume that (1) the paradox is an outcome of the “long road” of evolutions in HOF knowledge and its experts over forty years; (2) these evolutions have multiplied concepts and practices without a clear global coherence and without a political and institutional agenda; (3) breaking the HOF “glass ceiling” requires action on several levers at the conceptual level, the professional level, the management level and finally at political and institutional levels.

Keywords HOF evolution • Glass ceiling • Paradox

1 Introduction

It is now widely accepted that industrial safety is not just a question of technical design and engineering. Academics have produced a significant amount of knowledge about human and organizational factors (HOF). A set of HOF principles has been defined, and many concrete actions and programs have been successfully implemented at an operational level by emerging communities of HOF experts and practitioners.

But behind this apparent success, HOF are currently facing a challenging paradox. Indeed, even in the most advanced companies, the dramatic development of HOF knowledge and practices has not really helped to increase the influence of HOF on the strategic and management decisions that could have a significant impact on safety. In other words, a “glass ceiling” has emerged.

This lack of influence at the strategic and executive levels may have a negative feedback on HOF practices implemented at the operational level. This occurs every time a management tool is implemented, or a strategic decision is made that ignores

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or even contradicts HOF principles, meaning that HOF risk losing influence at all levels.

The key idea of this chapter is the following: breaking the glass ceiling cannot be limited to the presence of HOF experts within the board of directors. HOF influence lies in its legitimacy rooted in its expertise. HOF experts are not meant to directly participate in strategic decision-making, but could be involved in the rebuilding of a conceptual and practical coherence as well as in institutional work that could put HOF knowledge and practices at the core of strategic decision processes, management practices, management tools and operational practices.

2 The Evolution of HOF: Extending the Scope of Knowledge and the Variety of Issues

The evolution of HOF doctrines and practices shows a continuous enlargement of their scope. This has been fueled by both the analysis of normal functioning and the lessons learned from major accidents in high risk industries.

2.1 From Human-Machine Interactions and Human Error...

HOF practices are rooted in ergonomic models of people at work (physical and cognitive) in order to optimize human-machine interactions. “Human factors” and ergonomics emphasize the importance of “human errors” and the need to reduce them, at the individual level (optimization of human-machine interactions, fighting against “error inducing” designs) as well as at the collective level (“Crew Resource Management”). Such approaches still exist through “human performance” programs and best practices, but remain limited by important drawbacks caused by their “behavioral” and psychological biases.

2.2 ...To Organizational Factors...

However, the concept of “human error” is not purely behavioral, cognitive or technical, it also opens the way to organizational and managerial approaches. Errors are not limited to imperfections and weaknesses that should be eradicated through intensive training, good procedures and tight management and control or moral values. Their human dimension lies in them being an integral part of the normal functioning of humans in the real world. The challenge for safety is not to suppress all forms of errors, but to use human errors to access the complexity of the risky socio-technical

system that is operated [7]. Managing human errors requires both transparency (to understand what really happened) and learning processes (to prevent repetition of the same error).

The managerial implications of this assumption are crucial. Errors must be distinguished from faults or intentional violations. This evolution is based on the promotion of “just culture” as a key component of a wider “safety culture”, and on the abandon of “blame culture”.

Hence, blaming errors becomes a management fault that impedes transparency (increasing organizational silence) and learning processes and therefore produce negative impacts on safety.

This represents a turning-point. HOF are no longer referring only to “human factors” and instead are examining “organizational factors”: safety can be negatively or positively affected by organizations and not just by people or technology. The process of “normalization of deviance” [12] demonstrated that, for example, rather than there being someone who broke the existing NASA procedures, the whole Challenger launch procedure and management practices related to decision-making deviated from safety to performance goals and “produced” the accident.

Conversely, the High Reliability Organizations theory (HRO) showed that safety is “produced” during normal functioning by specific organizational settings and processes, and by management practices and culture [8]. Safety appears to be the outcome of a “social order” [11]. The emphasis is put on the way organizations deal with competing objectives and competing professional groups.

2.3 ...To Inter-organizational and Institutional Relationships

HOF have recently tackled a wider issue: the impact of inter-organizational relationships on safety. This includes relationships between licensees and subcontractors as well as between the regulator (or auditor) and licensees (or auditees) and supposes to develop a new institutional approach to safety. A lot is still to be done in this new area.

3 The Glass Ceiling Paradox of HOF: Growing Knowledge, but Weak Influence

The extension of the scope and the issues tackled by HOF represents significant progress, but also reveals a major weakness since it did not provide HOF with more influence in the decisions made by organizations. Despite the emergence of HOF networks and professional communities that implemented HOF programs at a very operational level, many HOF practitioners are aware of the weak influence HOF have on top management decisions. Our assumption is that this growing gap between

knowledge and influence reveals the existence of a “glass ceiling” favorizing the rise of an organizational hypocrisy [2]. The HOF discourse about safety is totally neglected or contradicted by the board of directors and strategic decision makers when it comes to safety issues. This is a major threat because HOF may lose their legitimacy from the point of view of fieldworkers and first line managers who take a crucial part in the production of safety performances. Furthermore, the multiplication of issues tackled by HOF, may create confusion in the messages delivered to the practitioners.

4 Levers for an Influential HOF in Organizations

Several levers can be activated to break the glass ceiling and strengthen the influence and the coherence of HOF approaches all over the organization. We distinguish between academic and empirical levers, but these interact and should obviously be activated together, and the academic ones should feed several of the empirical ones.

4.1 *Academic and Conceptual Levers for Multiple but Coherent HOF Research and Knowledge Integration*

Academically, the first challenge is to link together human factors and organizational factors into a more integrated HOF approach. As suggested before, the evolution of HOF from human factors (micro level) to organizational factors (meso level) to inter-organizational factors (macro level) has required a multiplication of concepts, methods and models borrowed from various academic disciplines beyond ergonomics: psychology, sociology, anthropology, management, safety sciences, political sciences... Although these disciplines compete or sometimes collaborate with difficulty, it is very important to preserve this plurality of approaches to prevent the risk of over-simplification of safety and security issues.

How then to reintroduce coherence while keeping the plurality of the approaches? A limited, but strong and coherent core set of concepts bridging the micro/meso/macro levels and the various disciplines involved must be defined. We believe the concepts of “activity” and “organizing” can play this role, for a number of reasons. First, they are cross-disciplinary. Second, they can operate at human, organizational and inter-organizational levels. Third, they assume that safety is *produced* (or fails to be produced) by human “activities” and organizational processes. Focusing on “organizing” is a way to assume that organizations are continuously “happening” [10] through day-to-day activities made of decision-making, sense-making and collective discussions about the issues and difficulties practitioners and managers face to “do a good job”. Fourth, they put complex tensions, contradictions and paradoxes at the core of safety issues (variety of goals and constraints; planning

vs. managing the unexpected; etc.). Fifth, they share a common methodology based on direct observations of very contextualized activities that take place at various organizational and inter-organizational levels. Such observations should feed rich case studies that could be part of a science-based and facts-based approach to HOF.

Finally, building the theoretical coherence of HOF through “activity” and “organizing” is a way to create the framework for fruitful discussions between competing approaches (cf. normal functioning approach proposed by HRO vs. knowledge of accidents) and various academic disciplines. Thus, we advocate¹ for a pragmatist (Dewey) and interactionist (Goffman) approach to HOF.

4.2 Empirical Levers for Embedding HOF in Actual Organization Practices at All Levels

Some suggest that the best way to promote HOF would be to act directly at the political level, turning HOF into a business function in high-risk industries (cf. chapter “Turning the Management of Safety Risk into a Business Function: The Challenge for Industrial Sociotechnical Systems in the 21st Century” by Daniel Mauriño in this book) and/or to give a seat on the board of directors to the HOF chief executive. Would it automatically break the glass ceiling and give HOF more influence? Possible drawbacks exist. First, HOF experts may spend more time dealing with power issues rather than safety issues, fighting against the interests of other business functions and bargaining for more resources at the expenses of other functions. Second, the presence of a HOF representative on the board of directors can be useless if their voice is not heard, in case of self-censorship or if they get “captured” by others (abandoning HOF’s interests and adopting others’ interests). What is true for the board of directors can also appear to be true at every board or meeting, whatever their hierarchical level in the company. Therefore, it is important to legitimate the actual influence of HOF rather than their formal presence. In other words, HOF influence depends more on being active in “organizing” processes than being present in formal “organization”.

We assume that HOF influence at the highest levels is a combination of legitimacy, management principles, concrete management tools and organizational settings that support the diffusion of HOF expertise across business functions and hierarchical levels, inside the organization but also outside, in relation with key stakeholders. HOF legitimacy comes from their expertise, derived from academic research, but also from the existence of more or less formal professional communities of HOF experts and practitioners and their reflexivity [5]. Such communities elaborate strong professional cultures that include safety as part of “doing a good job”. But HOF experts, professional communities and safety cultures need management support to spread their influence from the bottom to the top of the organization. This is where management principles, management tools and organizational settings come into play.

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¹In Foncsi but also in Chaire RESOH, a research project dedicated to HOF in inter-organizational safety issues (IMT-Atlantique, Andra, IRSN, Naval group, Orano).

The coherence of HOF management tools (i.e. formal safety culture of the company, performance indicators, pre-job briefing...) and their connections with management tools used by other functions is a key issue and requires specific engineering to prevent cacophony and promote polyphony [4]. This is especially the case with Human Resources (competency, career, salary, social relations...), management control (industrial and financial performance reporting tools) and with higher hierarchical levels. HOF expertise may irrigate the organization through these interconnected management tools that embed various visions of “doing a good job”. Management processes are in place to enable discussions on professional activities and difficulties with safety issues to be organized. Designing and managing discussion spaces [3, 9] is a management responsibility. Then subsidiary management becomes the key principle to organize the connection of hierarchical levels through the different discussion spaces. It is also a way to make strategic managers and CEO feel really responsible for safety and to include it in strategic discussions.

Since the top management levels and strategy oversee the relationships with the organization’s environment, breaking the glass ceiling by addressing the top management levels with HOF expertise and safety issues, supposes to put them at the core of the dialog with external stakeholders. It is especially the case for the regulator and for the “civil society” that have important expectations about safety, security and transparency. At a strategic level, safety is *produced* through such dialogs that have to be engineered.

Finally, the activation of the empirical levers we have identified requires “institutional work” [1, 6] realized by HOF experts and managers at various levels as a way of building HOF legitimacy and putting HOF expertise with the right shape, at the right time, in the right place to make the right decisions.

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