

## Chapter 4

# A Contribution to a Semiotic Approach of Risk Management

D. Galarreta

*Centre National d'Etudes Spatiales,  
18, av. Edouard Belin, 31401, Toulouse cedex 9. France*

### Abstract

In this chapter we examine how a semiotic approach of risks can be proposed and how the concept of affordance can be adapted to such a goal. We are reminded of the primitive notion of action and its close relation with risks. Perception issues are examined in order to make clear the relation between the concepts of action and of affordance. It turns out that the affordance concept does not belong to the primitive action paradigm and a risk cannot be entirely described as an affordance. A multi-viewpoints semiotics offers a convenient framework for defining a risk as a semiotic concept. We examine the question of managing risks in the special case of the Rosetta long-duration mission to prevent uncontrolled knowledge evolution. It appears that managing risks of knowledge evolution should be based in this case on the combination of text-mining techniques and organisational arrangements.

**Keywords:** multi-viewpoints semiotics, affordances, risk management

### 4.1 Introduction

The complex character of the organisation of large projects gives a new vision about the risk notion. If we consider for instance the risks of material or corporeal damages in large projects, two different approaches exist. The

first one is called the High Reliability Approach. It considers that accidents can be avoided provided good organisation and good management are implemented. The other approach is called the Normal Accident Theory. It considers that accidents are inevitable in complex systems. Here complex system means a system of behaviour which cannot be explained by only one point of view or theory but requires several viewpoints in order to understand it.

In this chapter we will try accordingly to argue that risks are not only inevitable but also necessary to better apprehend the technical objects which are designed or used in such contexts. Instead of being a sign of ignorance, risks correspond on the contrary of what is usually defined as *a piece of knowledge*. The impression of being in front of a paradox stems from the fact that knowledge is usually associated to a positive element although a risk often appears as a limit beyond which it is dangerous to venture.

However one motivation in this chapter is to examine the concept of affordance and how it can deal with the question of risks. This examination leads us to study the primitive notion of action and its close relation with the risk notion. In order to support this programme we refer to philosophers of action and of perception (B. Saint-Sernin, M. Dufrenne, and M. Pradines) and of course to J.J. Gibson. Ideas have a history. Their novelty does not change that fact. Referring these ideas to older ones that we ignored or forgot could be a way to perceive the true originality of the new ones. We hope that the reader will forgive us for long quotations of authors who are usually ignored by the usual audience of organisational semiotics, but whose works belong to that history of ideas. This chapter's plan is as follows:

- We first consider the genesis and the unity of the primitive concept of action.
- Then we evoke M. Pradines's conception of action. M. Pradines proposed a view of the sensation concept which both agrees with the notion of action we present and is close to the approach of J.J. Gibson for perception.
- We then analyse the perception theory of J.J. Gibson and its relation with action.
- We show how J.J. Gibson and the organisational semiotics derived the concept of affordance from perception ideas; and how they deviate from the action primitive paradigm from where they stemmed.
- We analyse to what extent a risk can be considered as an affordance.
- We examine the concept of risk within a multi-viewpoint semiotics.
- We end our chapter by examining the special case of risks of knowledge evolution in a long-duration space mission such as the ESA's Rosetta Mission.