# Chapter X

# Hooshmand – intelligence and emotion entangled in a simulation game

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**Abstract.** In Persian 'Hooshmand' means intelligence. The simulation Hoosmand-1 creates a clash between intellectual objectivity and emotional reactions to unexpected events. The simulated environment challenges skilled and experienced senior project managers to navigate their way through a set of complex decisions. Initial conditions are complicated but comprehensible, requiring application of knowledge and diligence. Then factors altering the context are introduced to create complex conditions in which standard responses no longer apply.
We review outcomes of the project for which Hooshmand-1 was designed. In regard to project portfolio management, cost-benefit ratios and business strategies received more attention than resource availability. In regard to quality decision-making, the effectiveness of team cognition shows up as a key faction shaping performance under stress. 'Black swan' events, groupthink traps and Abilene Paradox thinking can all inhibit quality decisions and Hooshmand-1 provides a context for their emergence and thoughtful analysis.

**Keywords.** Simulation, Decision Making , Groupthink, Resilience, Uncertainty, Black Swan

## 1. Background to design and application of Hooshmand-1

Project portfolio management (PPM) committees deal with financial and operational decision within complex social structures created by competition for limited resources and conflicting goals and interests among representatives of different business units in the organization. Social constructs [1] influence decision makers‘ perceptions, capacity for data integration and their collective judgement as a group of senior managers in a project portfolio committee. Perceptions of managers influence their decision making and are an important social factor in PPM committees as different decision makers demonstrate different perceptions [2]. Data integration includes functional information systems, [3] proper facilitation processes [4], information overloads and presentation and time pressures [5]. Existing research highlights the natural complexity of decision models in PPM because of the clashes among competing forces in a decision making meeting.

This complexity of decision making processes coupled with sources of uncertainty in PPM can generate very difficult conditions for decision makers where they cannot achieve a stable solution based on group agreements. Sources of uncertainty external or internal [2] create unpredicted events for decision makers which can result in unwanted consequences. Black Swan events [6] are identified as rare events having massive impacts across industries. For example in oil technology gas shale extraction is a recent instance which has influenced the oil industries across the globe [7]. Management of uncertainty in decision making in PPM is an area requiring close examination [8]. It is important to understand that non-conventional rules and tools are needed to manage such unusual conditions. Cynefin (a welsh word for place) [9] is one of these unconventional approaches; it refers to a framework which identifies five domains of knowledge and defines characteristics required to achieve effective decision making in each domain of knowledge.

The simulation Hooshmand-1 represents characteristics of Complicate and Complex domains of knowledge in two separate scenarios based on conditions experienced in the Complicated and Complex domains [10]. The simulation requires participants to use probes to understand their context [11] and does so through creating disruptive events. The simulation creates a unique set of conditions for study of decision makers’ judgements and decision-making processes in PPM steering committee contexts where they are finding they have to cope with Black Swan events arising during

their decision making [12]. Figure 1 shows the process of simulation in a simple demonstration.

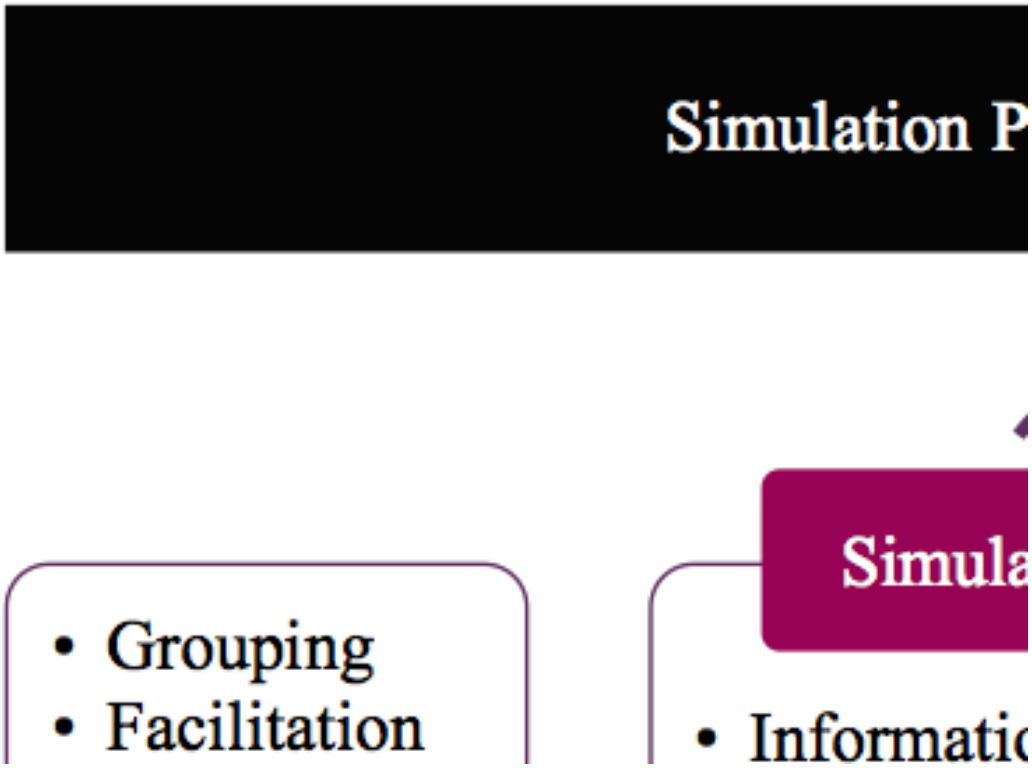


**Fig. 1.** The process of simulation Hooshmand-1

## 2. Judgement of participants about decision criteria in Hooshmand-1

'Triads' are a triangular shaped tool which allow for three alternatives on a question. The Triads help people make Judgement by asking them to compare three criteria at the same time, providing a less biased outcome than that arrived at through use of traditional two-dimensional tools.

Participants play their assigned roles in each scenario and provide their reflection in a questionnaire. One of the interesting results has been participants' judgements around the trio of key decision criteria of cost-benefits,

business strategy and resources availability shows that the pattern of opinions skews towards a preference for focusing on cost-benefit as participants preferred decision criteria as they experience unexpected events from Figure 2 to Figure 3.

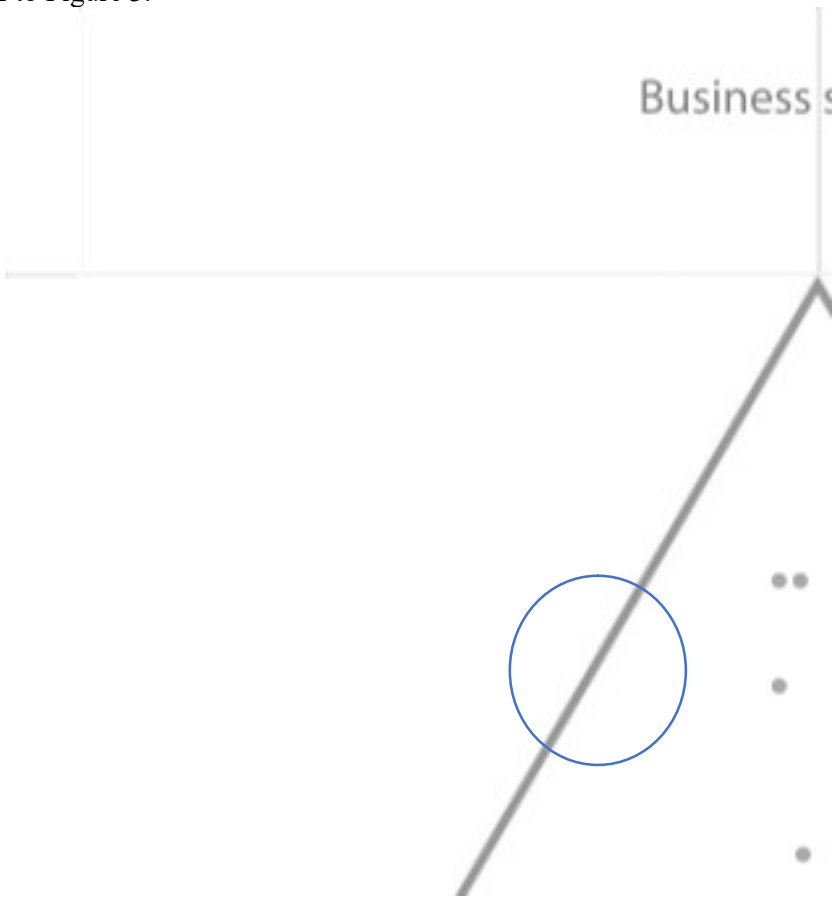


**Fig. 2.** Pattern of participants' perceptions for decision criteria before first real-time event in simulation HOOSHMAND-1

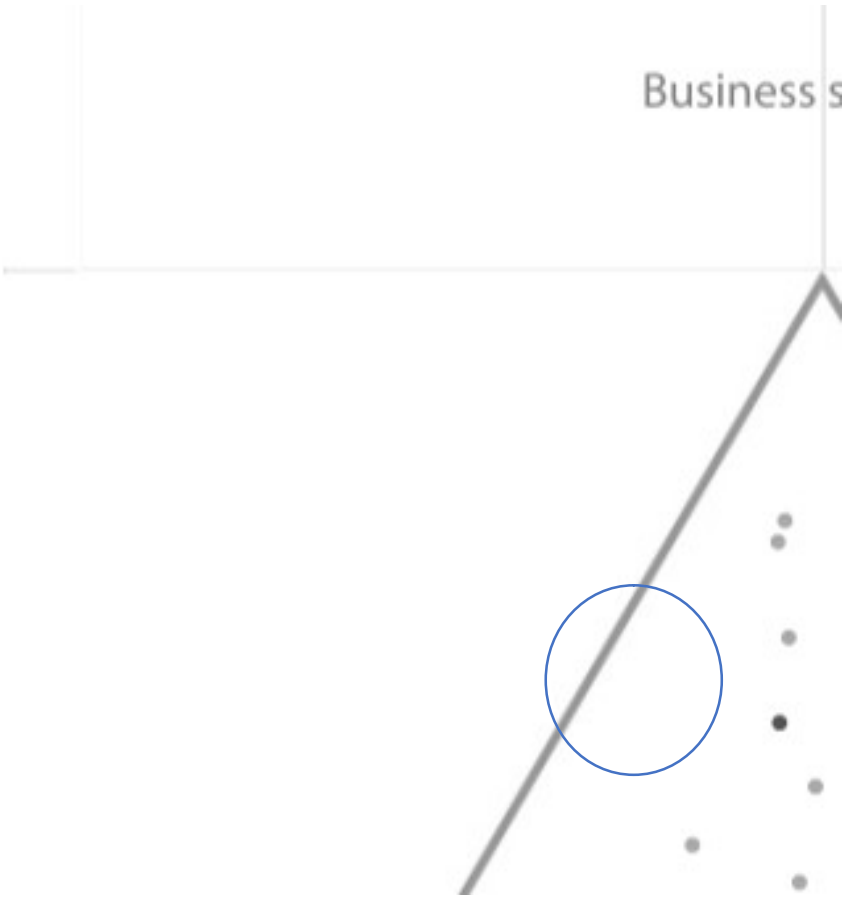


**Fig. 3.** Pattern of participants' perceptions for decision criteria before first real-time event in simulation HOOSHMAND-1

Figure 4 shows three situations: at the beginning of complex domain as scenario 2 (b), at the end of Black Swan events (c and d) in the complex domain. The trend for the change of judgements demonstrated in Figure 4 emphasizes how the increase in uncertainty focuses decision makers attention on cost-benefit as the only criterion to pay attention to in their decision-making meeting. This process of thinking diverts executive decision makers from a robust decision making while clearer awareness of all the factors in the context would indicate that they should consider all decision criteria in balance.

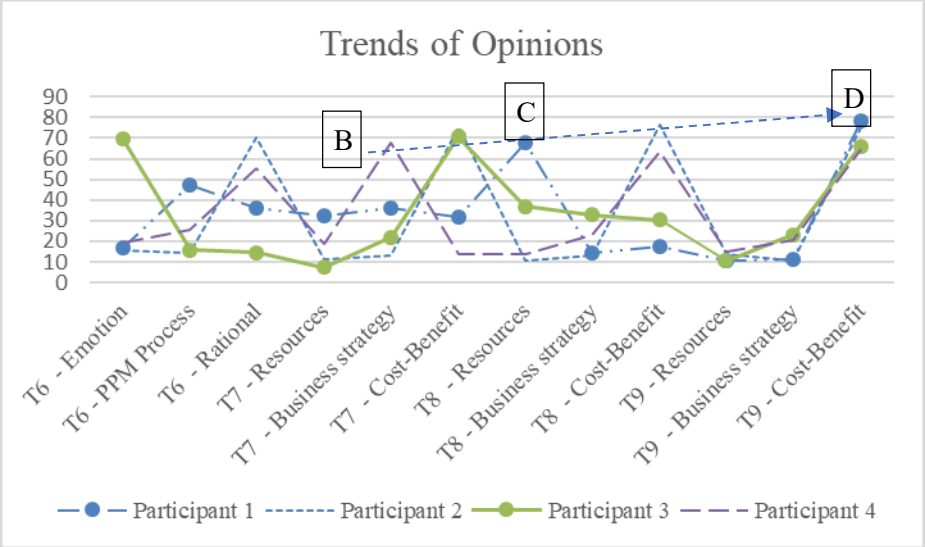


**Fig. 4.** Trend of opinion for decision criteria in PPM

## 3. Decision Making Caveats during simulation Hooshmand-1

The simulation is designed to study decision making in PPM in groups of three participants who are in role representing the PPM steering company for an artificial company. This design encouraged each group to carry out decision making in PPM and provided the first author with the opportunity to study potential caveats of decision making processes as they operated within contexts that have been described by the terms 'Abilene paradox' and 'Groupthink'. The concept of an Abilene Paradox (AP) describes situations in which "organisations frequently take actions in contradiction to what they really want to do and therefore defeat the very purposes they are trying to achieve" [13, p. 170]. Five interrelated components of AP that contribute to its occurrence are: 1–Public agreement that a current situation is acceptable but in private individuals are dissatisfied, which is called 'pluralistic ignorance'; 2–ineffective communication when the majority of the group agree because of their perception that others do so; 3–

Communication of group sentiments based on their misinterpretation ; 4– decision makers' reprise and their questions on the rationality of their decisions is not questioned or challenged; and, 5–failure of managers to understand the process that resulted in poor decisions in order to avoid such situations in future [14].

Groupthink as Janis (1972) originally defined it, is a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise [15, p. 1].

Three key symptoms indicate the existence of Groupthink in Group Decision Making (GDM). Symptom Type I concerns overestimation of group power, while Type II deals with closed mindedness and Type III is related to pressure toward uniformity [16]. Data collected during play of the simulation Hooshmand-1 identified existence of Symptoms type II and type III of Groupthink. The antecedent conditions of Groupthink during group decision making in simulation Hooshmand-1 and the consequences of that are summarized in Figure 5.

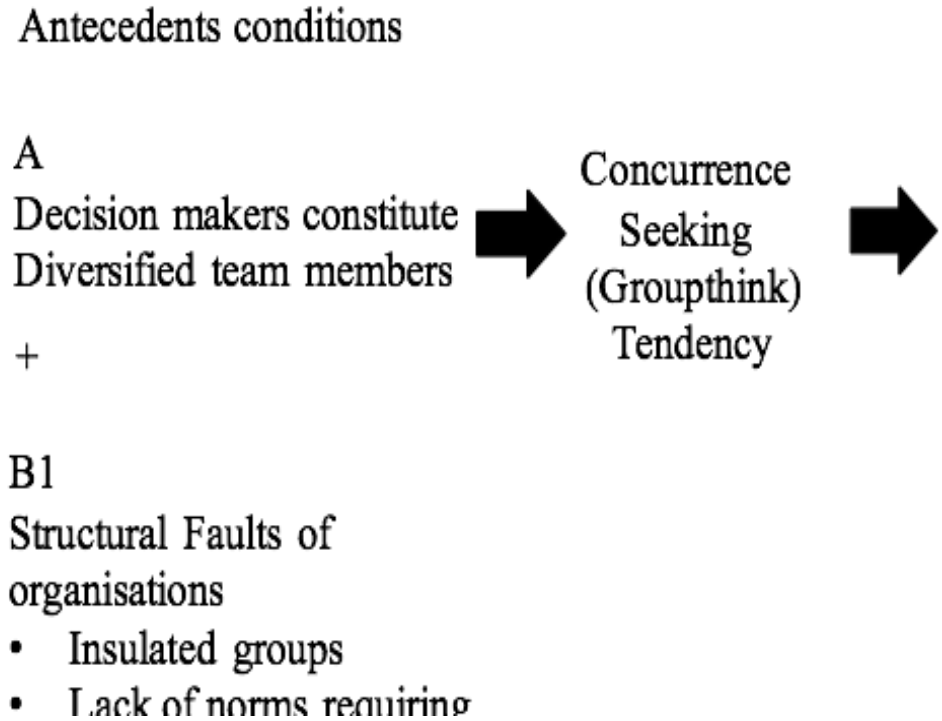


**Fig. 5.** summary of antecedent conditions for Groupthink in Hooshmand-1 [12]

According to Shalbafan and Leigh [12], antecedent conditions are listed in parameters, A, B1 and B2 in Figure 3. Decision makers were from different organizations without any joint experience prior to the simulation. The key organizational issue faced was the insulation of groups from working together, as per rules used in the simulation, and lack of norms that left the decision to a group of three participants to decide how to work together and make a decision. Provocative conflicts arose from time pressures and complexity because of unexpected events which were engineered in the simulation, and the difficulties of working in a simulation Context as many participants were not familiar with the method or the PPM tools that were introduced in Context1 and Context2. All participants tried to progress at the same time. There is evidence that some groups did not absorb all available information on their folders and some other groups slid into chaos and dis-order domains and could not reach a decision.

## 4. Resilience factors for group decision making under uncertainty

Team cognition can play a role in decision makers' resilience when they face uncertainty. Team Cognition has an important role on team performance in data exchange in a group decision making [17]. Simulation Hooshmand-1 could help teams to develop their knowledge and skills with regards to team awareness and transactive memory systems [18]. The simulation Hooshmand-1 has used movements among Cynefin domains of knowledge and pattern analysis [19] as indicators to measure achieved team cognition during the simulation Hooshmand-1. Table 1 shows some of the measures used for team cognition.

**Table 1.** Adapted from [20, p. 246]

| Challenges | Solutions |
|---|---|
| Measures applicable to heterogeneous teams<br>Measures that capture emergent cognition | Heterogeneous knowledge metrics (e.g. role-specific referents)<br>Holistic measures taken at the team level (e.g. consensus ratings) |
| Holistic, embedded, real-time metrics | Communication pattern analysis (Hooshmand-1)<br>Cynefin Domains Movements - (Hooshmand-1) |
| Measures of emergent team situation awareness | CAST: coordinated perception and action of team members in the face of change |

Another interesting point of evidence from the simulation Hooshmand-1 is the change of behavior across groups while they move through different phases of uncertainty. As the uncertainty increases over time in different scenarios, the focus on team work reduces and group members tend to focus on individual actions which means reducing team cognition. This explains earlier findings explained in the last section that some groups missed out information available such as business strategy, resources plan and financial criteria, because they could not make sense of all of them under uncertainty. The simulation Hooshmand-1 used a Dyad which measures opinion about focus of activity on team and individuals. The SenseMaker software was used to analyses results of dyads and data analyses provided a comparison between opinion of participants in Complicated (Context 1) and Complex (Context 2) domains.

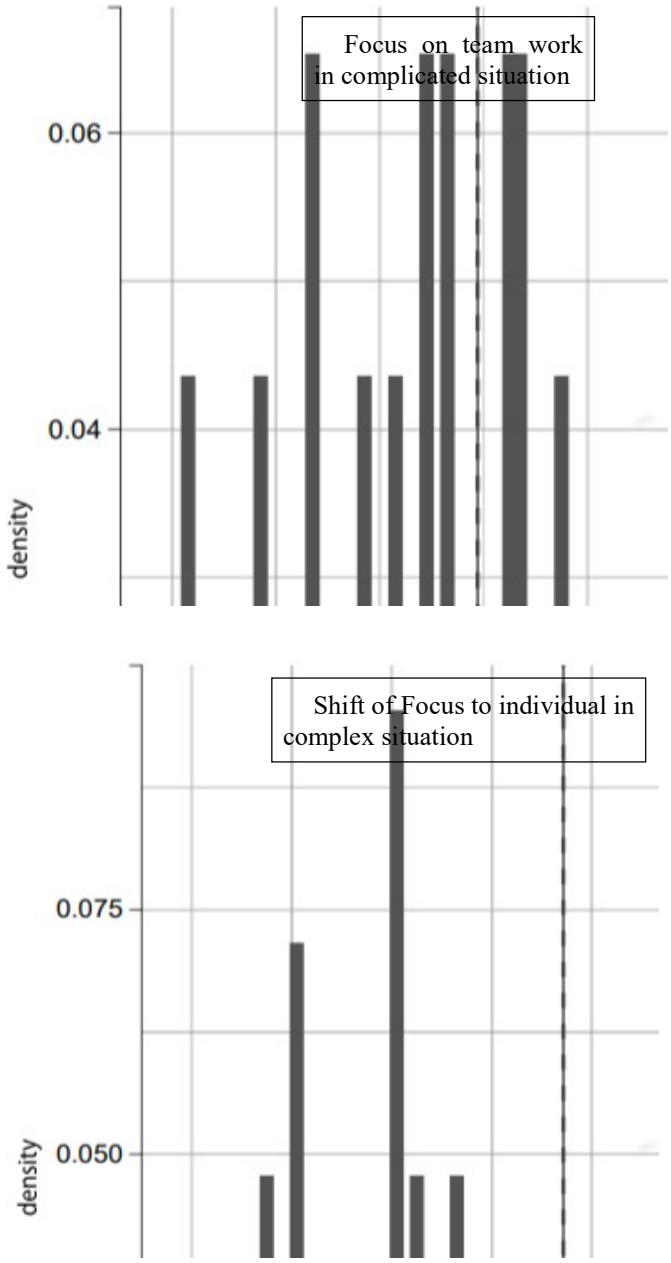


**Fig. 6.** Distribution of participants 'opinion on focus on team vs. focus on individual

Fig. 6 shows that the mean of distribution for “focus on team” has shifted towards “focus on individual”. This means the group of 43 participants demonstrated more individualism behaviour during decision making with unexpected events. This analysis highlights the importance of team cognition and people’s preparedness for difficult times. The simulation Hooshmand-1 has provided organisations opportunities to measure and assess team cognition through practice and role-based scenarios and improve their resilience to stay connected and utilize the team knowledge and skills for making quality decisions under stress and uncertainty.

## 5. Recommendation and conclusion

The simulation Hooshmand-1 causes participants to generate patterns of behavior that can be recorded using SenseMaker software and the Cynefin concept of ‘domains of knowledge’ which help to uncover their current decision making modes. Once revealed, these patterns can be examined for the strengths and flaws in their reasoning enabling organizational committees to revise their practices to ensure that their decision making sustains successful operation in times of uncertainty and complexity. The design of the simulation game moves through two stages of the Cynefin domains beginning with use of complicated - expert - knowledge and shifting (without warning) to a context incorporating ‘Black Swan’ events. Such conditions are not well understood and the research conducted with Hooshmand-1 has demonstrated that even highly competent decision makers can become susceptible to fatal errors. We conclude that when conditions require decision-making committees to shift to different, unfamiliar modes of decision making, they are likely to fail if they do not consciously shift their pattern of thinking.

When conditions require committees to explore (called ‘probing’ in the Cynefin model) for unknown options and unlearn their reliance on familiar, comfortable expertise we recommend they begin with a direct and honest exploration of their own patterns of reasoning and thinking. Hooshmand-1 provides committees with insights into how their decision making may be impaired, by such well known flaws in human thinking as the 'Abilene Paradox’ and ‘Groupthink’. These insights once revealed can become the basis for a robust re-assessment of the ‘health’ of their decision making processes. Taking this path to face the realities of decision making in complex conditions requires a deal of honesty, and sufficient

time to absorb the potential for future adverse impacts if major changes in thinking processes are not made. The most likely alternative outcome is eventual disaster, as decisions - made without the benefit of reviewing requirements of the unfamiliar 'complex' knowledge domain - fail to address the real nature of the conditions confronting the decision makers.

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