

# An Approach to Developmental Cognition in Organizations

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Received: August 14, 2015

Accepted: December 3, 2015

Online Published: December 25, 2015

doi: 10.5539/ibr.v9n1p1

URL: <http://dx.doi.org/10.5539/ibr.v9n1p1>

## Abstract

As an enthusing concept to re-define the organizational cosmos in a novel form, this study approve the cognition of individuals as a starting point. Despite the abundant study of organizational cognition concept, there remains an uncharted area which depicts; how perceptions of different cognitive capacities might hierarchise the organizational cosmos. Upon this, we used 'Kohlberg's Moral Development Theory' as a metaphor and found 3 hierachic cognitive level which characterize on different justification modes. Also an additional theoric level identified for possible phenomenons. We show that the consideration styles of organization members evolve while their cognitive capacities and related environmental perceptions broaden and that these shifts are consistently patterned. An objective scale was developed using an ontological approach to confirm the oral interviews. Eventually, we obtained two different scales for industrial use.

**Keywords:** organizational cognition, Kohlberg's moral development theory, decision making

## 1. Introduction

An organization member is likely to initiate interactions with environments that are identified by the cognitive borders of that same member. It can be argued that individuals can be proactive in areas that are defined by their own cognitive borders but can only be reactive outside of this self-defined area. Organizational aspirations and fears could be considered functions of this awareness. Defining the reduced proactive environment of individuals could mean the discovery of an organization's unused potential, give us ideas about the strengths and weaknesses of social networks, or could draw new methods for understanding organizations that are currently unforeseen.

Conscious behavior is defined as behavior that is assisted by the prediction of its repercussions. According to Hawkins (Seni, 2011), an intelligent system is an anticipatory memory system or infers meaning from its environment. This describes the ability to employ this information to maintain a system's stability in a dynamic environment, according to Rosen and Kineman (2005, p. 399). Therefore, any system should reflect the state of its environment (as well as the system / environment interaction) (Seni, 2011, p. 1491).

However, no person can fully comprehend the entire system to which he or she belongs. Herbert Simon (Morgan, 1998, p. 93) detected similarities between the decision-making process of individuals and organizations; he argued that, due to the limited information processing ability of its members, an organization could never be perfectly rational. Pomerol and Adam (2004, p. 653) summarized Herbert Simon's term of "limited rationality" as indicative that rational maximization is nonsensical for the following reasons. (1) Realization probabilities cannot be assigned to options, and possible options cannot be fully enumerated. (2) Owing to the multiple criteria and levels of the decision-making processes, decisions made at different levels cannot be adapted to each other. (3) Preferences are not exogenous to decisions. (4) Attention is a scarce resource that is needed when making decisions.

At the other end, an agent should be connected to or have compatible interaction with at least one other system agent to be considered part of that system. A. L. Barabasi (2010, p. 29) states that a single connection per node is sufficient for a member to remain connected to a social network. When the average contact is less than one node, the network is divided into clusters that cannot communicate with each other.

Therefore, the cognitive environment of an organization member is defined by the playground that emerges between the boundaries that limited capacity places on the overall complexity (that no person can be fully aware of) and the single system agent (human or a material) that the member have to be aware.

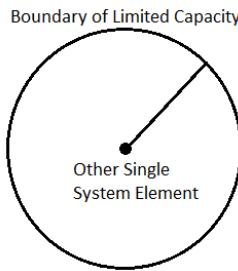


Figure 1. The essential bound of the member and its' limited capacity

The identification of the position of system agents somewhere between these two ends allows us to identify the system from a combination of these positions. In other words, measuring the cognition level of a member entails measuring the limited rationality level of that member by reduction to a metaphor.

## 2. Untouched Side of Organizational Cognition

Relying on simplified representations or mental models while managing an organization is a necessity according to March and Simon (1958). Mental models consist of the concepts and relationships an individual uses to understand various situations or environments on a scale that is beyond the range of their immediate perception (Barr et al., 1992, p. 15). The present study considers selective perception to be a result of the assessment (cognitive) capacity of organization members. In this respect, different cognitive maps appear as a function of Kohlberg's moral phases. However, these researchers below mostly dealt with cognitive frames without considering their individual-capacity-bounded structures. A few study approach cognition in terms of cognitive hierarchy and the improvement of agents.

According to Jones (1995, p. 65) two main perspectives may be identified regarding the Organizational Cognition (OC) concept. The first one implies that OC is dependent on human interpretation; however, it is not necessarily a simple aggregation of individual learning. The second one implies that OC may exist independent of human interpretation, and theoretical support is existent among the literature, which cites examples such as artificial intelligence, swarm intelligence, and cybernetics.

Weick and Roberts (1993, p. 357) structured their "Collective mind" concept on the first perspective, and their study partially suits the concept of the present study. "Collective mind" is conceptualized as a pattern of heedful interrelations in a social system. Heedful actors execute their actions, understanding that the system consists of the connected actions of themselves and others (representation), and interrelate their actions within the system (subordination). As heedful interrelation increases, organizational errors decrease. The approach of addressing each person as an agent that should consider the other members and subsystems coincides with the view of the present study. However, the present study tried to grade the heedfulness of system agents distinctly. In another study, Lant, Milliken, and Batra (1992) found that "those firms whose managers indicate an awareness of environmental changes will be more likely to exhibit reorientation." Their hypothesis has been supported in both industries that they have researched.

Weick and Gilfillan (1971) built a laboratory site using a collective mind that allows three people to achieve a common target without communicating with each other. Whenever newcomers attended the group, the heedful interrelating of the experienced members could "read" the newcomer's intentions quickly; however, a pattern of heedless interrelating represents a loss of intelligence that is reflected in missed targets and slow change.

Kaplan and Henderson (2005) argued that cognitive frames, interests, and incentives interact and co-evolve. Incentives would be defined in relation to the existing cognitive frames of the firm's managers and employees. According to them, one of the challenges that all firms face is identifying exactly what an employee is likely to do without being paid to do it or what his or her true interests are. We addressed this question from our point of view in the "Fear and Enthusiasm" and "Conclusion" sections. We draw a conceptual framework to illustrate how the cognitive framework of an employee could or should define the motivation approach of the manager.

The above studies share one common element: Each of them mediately builds their organization-bounded arguments on the individual's different cognitive capacities. Referring to the scarcity of similar studies, there seems to be a continued need to understand the environmental scanning process of individuals using a philosophy of improvement. Our psychologically oriented approach may be useful in understanding how cognitive process and assessment could be enslaved by intellectual hierarchy. Thus, the basic aim of this study is

limited to identifying the hierarchical cognition levels, using a theoretical approach to classify them, and eventually using scales to reveal them in individuals.

A group of studies (Barrett & Depinet, 1991; Wilk et al., 1995; Wilk & Sackett, 1996; Colarelli et al., 1987; Gaugler et al., 1987) presents a rich literature on the effects of cognitive abilities and socio-economic class on job performance without building organization bounded concepts. Overall, IQ tests or other cognitive tests like LRT or ETS approaches to human cognition in terms of capacity and development without connecting them to the organizational environment. We preferred to not use these scales of cognition to measure our subjects' cognitive capacities due to their time consuming features and due to our conceptualization of the Kohlbergian stages of spatial comprehension, despite some studies, like Kuncel et al. (2004), contradicting the notion that intelligence at work is wholly different from intelligence at school.

### *2.1 The Other Literature*

Numerous body of literature provided useful knowledge on mental frames by identifying the environment as interpretations of the perceivers while these interpretations shape how organizations respond to their environment. Porac and Thomas (1990) studied how decision makers simplify the competitive environment by using mental classifications and how decision makers frame competitive environments and understand the nature of competitive threats. Argued hierarchical cognitive categories in this study are not stratified for different cognitive capacities, contrary, they are current for anybody. Bougon et al. (1977) empirically analysed an organization's cognition by using cause maps and show us that organizations are stored in the minds of the participants in the form of cognitive maps, and particularly in the form of cause maps. Dearborn and Simon (1958) reveals that, each executive perceive aspects of a situation that relate specifically to the activities and goals of his department. Many others (Barnes, 1984; Ford & Baucus, 1987; Hewitt & Hall, 1973; Löwstedt, 1993; Starbuck & Milliken, 1988; Cowan, 1986) examined the ad-hoc explanations and biases used for problematic situations and demonstrated that decision makers cannot design interpretation free organizations or explained the way actors thought about organizations to give them order, to construct a reality.

Some others approached cognitive maps in a more dynamic way. With the study of "How Managers Construe Key Organizational Events", Lynn (1990) reveals how managers' interpretations of key events evolve through a series of stages. Sawy and Pauchant (1988) focused on examining the shifts of frames of reference as opposed to their static contents. Fahey and Narayanan (1989) had revealed the cognitive maps of a company over a 20-year period and analysed for their fit with the company's environmental context.

Another group of study seems to focus on the relation between organization and the environment in terms of cognition concept. Anderson and Paine (1975) established a quadrant based theoretic model through a perceptual strategy formulation for understanding organization-environment interaction. Model is composed of perceptions of environmental certainty and uncertainty, and low and high perceived need for change. Reger and Huff (1993) shows that industry participants share perceptions about strategic commonalities among firms. They represent the strategic groups derived from the cognitive structure of strategists in Bank Holding Industry demonstrate that executive perceptions have real potential for competitive strategy research. Daft's model (1984) describes four interpretation modes: Enacting, discovering, undirected viewing, and conditioned viewing due to the intersection of unanalyzable-analyzable environment and passive-active organizational intrusiveness.

At the more abstract side, organizational belief systems became a target by Williams (2001) that has set up a model that studying the organizational learning through organizational culture. Also Nonaka (1991) has contributed to the popularity of the tacit knowledge concept means; abstract knowledge like know how, insights and inspirations that is difficult to transfer. Krogh and Ross (1995) discussed representative and traditional epistemology and organizations as autopoietic systems. In an original study, Pandey and Gupta (2008) borrowed the quadrant reality view from Ken Wilber and used as an epistemological tool to define material, social and spiritual consciousness for organizations. Study deals with organizations as collective intelligence units.

Limited examples of Kohlbergian literature touching cognition concept while doing this indirectly. In the model of Street and his colleagues (Seymen & Bolat, 2007, p. 45) the level of cognitive effort expended, constitutes the focus of the study. The individual which consuming high level of cognitive effort begin to realize the ethical issues and consequently performs ethical judgments. This model correspond with the present study in terms of the described inertia phenomenon of task-stage members (see forward). Most studies at this side deal with ethical decision making processes while partially referring Kohlberg's Theory. They intensely focus on moral decisions. Some of them has shared below or having an idea: Trevino (1986) theoretically offered insight into how managers think about ethical dilemmas. Study puts Kohlberg's Theory into a part of the model without transforming it and has not include empirical datas. Jones (1991) has remarked that; ethical decision making is

basically dependent on the problem, so it is situational. Physical, psychological, cultural or social distances affects the sensitivity of individuals to ethical issues. Rest (1984, pp. 20-26) has based his ethical behavior-oriented model on a process consisting of four main stages: Realizing the ethical problem, moral development and ethical judgment (At this point, the model of Kohlberg becomes valid), ethical intention and ethical behaviour.

### **3. Theoric Construction**

Kohlberg's research depicted a structure of moral reasoning and its transformations from childhood to adulthood. His framework provides three extensive levels of cognitive moral development, each composed of two stages (Trevino, 1986, p. 604). Each higher stage (a) has new logical features, (b) includes the logical features of lower stages and (c) addresses problems which were unrecognized or unresolved by lower stages (Cesur, 1997, p. 5). The nested character of hierarchical stages are the most important reason of unsuccessful objective scale attempts for Kohlberg's Theory. We did not overcome this problem. We invalidate it by developing an objective scale for only confirming the hierachic positions of defined stages by oral interviews.

We need to clarify each stage due to the bounded theoretic structure of the present study to Kohlbergs Theory. 'Heinz Dilemma' should be mentioned for evaluating the answers corresponding to each moral stage: "In Europe, a woman was near death from cancer. There was one drug the doctors thought might save her. A druggist in the same town had discovered it, but he was charging ten times what the drug cost him to make. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together half of what it cost. The druggist refused to sell it cheaper or let Heinz pay later. So Heinz got desperate and broke into the man's store to steal the drug for his wife. Should Heinz have done that? Why or why not?" (Bee & Boyd, 2009, 675). Stage 1: The punishment-and-obedience orientation. The physical consequences of action determine it's goodness or badness, regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning obedience to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority. (Kohlberg & Hersh, 1977, p. 54) A typical answer of children from stage 1 is: "Stealing is bad because you get punished as a result." It is also possible for a child to support Heinz action: "Heinz may steal it because he asked for buying first and he is not stealing a big thing, would not punished." (Bee & Boyd, 2009, p. 677). Stage 2: The instrumental-relativist orientation. Right action is an action which satisfies one's own needs and sometimes the needs of others. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of faithfulness, gratefulness or justice (Kohlberg & Hersh, 1977, p. 55). An example for second stage children: "Heinz would steal the drug if he wants his wife alive but if he wants to marry with a younger and more beautiful woman, he doesn't have to steal it" (Bee & Boyd, 2009, p. 678). Stage 3: The interpersonal concordance orientation. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or 'natural' behavior. (Kohlberg & Hersh, 1977, p. 55). A thirteen years old child named Don is given a typical answer of stage 3 as: "This is definitely pharmacist's fault, not fair, he wants to rip him off and allowing someones to die. I don't think they should put Heinz in jail." (Bee & Boyd, 2009, p. 678). Stage 4: The "law and order" orientation. Right behavior consists of fulfilling one's duty, showing respect to authority and maintaining the social order for its own sake (Kohlberg & Hersh, 1977, p. 55). Most of the respondents says that they understand Heinz goodwill and motivation but the theft should not be forgiven. Because if we ignore the law whenever we think we find a good reason, the result will be chaos (Bee & Boyd, 2009, p. 678). Stage 5: The social-contract, legalistic orientation, generally with utilitarian overtones. Right action tends to be defined in terms of general individual rights and standards which have been critically examined and agreed upon by the whole society. The result is an emphasis upon the 'legal point of view', but with an emphasis upon the possibility of changing law in terms of rational considerations of social utility (rather than freezing it in terms of Stage 4 'law and order') (Kohlberg & Hersh, 1977, p. 55). Stage 6 have not discussed here.

#### *3.1 Space, Time and Complexity*

Kohlberg (1981) states that moral reasoning depends upon advanced logical reasoning and that there is also a parallelism between an individual's logical stage and his/her moral stage (Cesur, 1997, p. 7). In Kohlbergian studies, so long as the ages and the education levels of the subjects increase, the justification modes of the answers to the dilemmas shift from low-level to high-level moral judgements. Several correlational and cross-sectional studies have examined relationships among the stages of cognitive development, perspective taking, and moral development. Moderate correlations have been found among them (Cesur, 1997, p. 7). In Kohlberg's longitudinal sample, correlations between an adult's moral maturity score and educational level ranged from .53 to .69. Research results suggest that the continuation of adult development is related to educational experience (Trevino, 1986, p. 607). At the sociological level, the subject's justification modes will

rise as long as he or she belongs to a modern, rather than traditional, society. Stage 5 is the highest typically observed in urban communities. In tribal societies, however, which Snarey termed as “folk society”, it was exceptional for adults to be above the third stage (Bee & Boyd, 2009, p. 682). When society is faced with a broader environment, members move through higher levels of cognition while they individuate as a result of a kind of self-organization, and the need for external sources of authority decreases. However, individuals in a tribal society do not have to take a wider environment into account.

Referring to these discussions, we know that there is a kind of relationship between the Kohlbergian stages and human cognitive capacity. To address this point, we apply cognitive capacity to ontological issues: space, time, and complexity notions. Association could be considered a consequence of decomposition, which creates the space, while time and complexity notions are functions of the space.

With this perspective, spatial comprehension could be divided into two main parts wherein the second requires the first: spatial comprehension and associational comprehension. Özak and Gökmen (2009) define spatial memory by using three processes: sensing the space, perceiving the space, and encoding the space in memory (Yazıcı, 2012, p. 1005). We focused on the second, the cognitive activity regarding interrelating system elements in space. Complexity comprehension is a function of this activity, and it is divided into three parts in terms of leading to different kinds of actions: (a) self-focused actions, which actualize in response to “individual task area” (see forward); (b) directed actions, which actualize in response to directly linked system elements and wherein the reactions of the effected system elements are ignored; And (c) pre-estimated actions, which actualize in response to indirect system elements. The effected elements may react, and that reaction may be against the initiator or other linked elements within the space. The decision maker uses a blend of these three graded approaches according to his cognitive capacity while acting in different time situations. Pre-estimated actions could be categorized into more grades, and the existence of these grades certainly depends on the supposition of what defines the borders of the system elements.

According to Lawrence and Lorsch (1967) an organization is called complex if it consists of several components that differ from one another in terms of formal structures, the members’ goal orientations, the members’ time orientations, and the members’ interpersonal orientations (Fioretti & Visser, 2004, p. 12). Managing complexity requires systems thinking. Instead of isolating smaller parts of the system being studied, systems thinking works by expanding its view to take into account larger numbers of interactions as an issue is being studied (Aronson, 1996). Therefore, it is assumed that higher cognitive ability corresponds with higher understanding of complexity. Conversely, Fioretti, and Visser (2004, p. 12) propose a shifted approach that emphasizes complexity as a result of cognitive capacity. According to them, complexity should not be seen as an objective feature of some organizational characteristic, but rather as relative to the decision maker.

Ajzen (1991) expected that decisions would be influenced by both actual and perceived opportunities and resources, such as time, money, skills, and the cooperation of others (Stum, 2006, p. 80). While making decisions, the value of a desirable or undesirable consequence will typically decrease as the consequence becomes more remote over time (Hinson et al., 2003, p. 298). An individual discounts the value of uncertain outcomes as a function of a decreasing probability of receiving them (Nasrallah et al., 2009). However, for some people, the value of a reward does not decline greatly over time, and, for others, any appreciable delay greatly reduces the value of the reward. For example, studies on the decision-making process have shown a developmental progression. Children greatly discount delayed sums of money, whereas adults are generally more tolerant of delay (Hinson et al., 2003, p. 299). In their experimental study, Hinson and colleagues (2003, p. 301) managed to induce an impulsive pattern of choice by using an external load on the working memory of attendants. In other words, cognitively overloaded subjects changed their decision-making patterns through discounting the value of future earnings. This would mean that discounted value is a function of projection capacity as well as time variable, and projection capacity is naturally partially associated with long term or myopic decision-making. Roets and Van Hiel (2011, p. 497) state that stressors (loads) lead to two specific changes in decision making, according to Staal (2004): They cause “information processing to become more rigid with fewer alternatives scanned” and this includes “the tendency to persist with a method or problem-solving strategy even after it has ceased to be helpful.” We found traces of this tendency in the differences between our hierarchically decomposed subjects in the present study.

Consequently, we assumed that when the level of Kohlbergian Organizational Cognition (KOC) increases, the rationales of organization members refer to a larger space, a longer period of time, and higher complexity. We will not present how the survey questions correspond to space, time, and complexity notions due to limited space. The basic hypothesis of the present study is as follows:

H: Hierarchical KOC levels are positively related to the cognitive capacities of organization members, which are identified by space, time, and complexity comprehension.

However, it is incorrect to associate moral development with cognitive development literally. According to Trevino (1986, p. 606) the cognitive nature of moral judgment was tested in different ways. For example, in Kohlberg's longitudinal sample, the correlations between adult moral judgment levels and IQ ranged from .37 to .57, which indicated that moral judgment has a cognitive base but should not be correlated with IQ solely.

### *3.2 Theorization of KOC Stages*

If cognitive capacity partially defines the level of moral judgement when a subject is confronted with the realities created by Kohlberg's dilemma, then it would be expected that the same cognitive capacity would define the justification modes of the organizational behaviors of members when they are confronted with the realities created by a suitable dilemma.

Morality is supposed to be a source of normative reasons for why we should act, think, or feel a certain way (Luco, 2014, p. 362). This definition could be translated as follows: the term "morality" concerns the concept of what is "right" and what is "wrong". When we ask to individuals belonging to different stages to define "right" and "wrong," the expected answers can be conceptualized according to Kohlbergian studies as follows.

According to the 1<sup>st</sup> moral stage individual, things that lead to punishment are wrong, and those that do not are right. According to the 2<sup>nd</sup>, things for which you are rewarded are right, and the reverse are wrong. According to the 3<sup>rd</sup>, things that please acquaintances and are approved by them are right, and those that do not are wrong. According to the 4<sup>th</sup>, things that serve to maintain the integrity of the system are right, and those that do not are wrong. According to the 5<sup>th</sup>, suggestions that allow the system to be reconstructable are right, and those that do not are wrong. According to the 6<sup>th</sup>, things that serve supreme purposes are right, and those that do not are wrong.

We will use the notion of "Individual Task Area" for our theoretical construction, and we shall clarify it in order to translate "morality" (for the human sphere) into "meaningfulness" (for the organization member sphere) or "right" and "wrong" into "useful" and "useless." Individual Task Area is conceptualized as the smallest conscious island of the organization because this is the first domain that the cognition of an organization member meets at its own boundaries. The simpler system elements draw the boundaries of this domain, which every willed organization member uses his or her willpower on.

According to Personal Construct Theory, individuals do not passively perceive the environment; they actively construe (attach meaning to) perceptions (Reger & Huff, 1993, p. 107). According to Humberto Maturana and Francisco Varela, all systems are "autopoetic"; they refer to themselves and cannot interact with patterns that cannot be identified by their inner templates. Therefore, the interaction of a system with its environment is a reflection of its own organization (Morgan, 1998, p. 283). With this perspective, we can say that the cognitive capacities of "task-stage" members (see the Cognitive Stages section) reduce their justification universe to simpler system elements that fall under the provisions of the members' willpower without resistance. The force of the willpower of individuals acts as a stable atomic nucleus (this power often originates from organizational regulations) and gathers relatively flabby system elements (all of the meta within the boundaries of the task area). This unequal connection (between the flabby majority and relatively independent single system component) then creates the smallest sub-system that tends to protect its own borders. This area was used as the basic measurement unit that segmented the cognitive environment to build our theoretical concept. It is thought that Kohlberg's moral stages would then coincide with different compositions of "individual task areas." Expanding space, time period, and increasing complexity are functions of this composition.

It is possible to discuss how individually defined task areas would self-organize within the boundaries of an organization, but it is better for our study to assume that, as already happens in formal organizations, these conscious islands are identified by a higher authority. The overlapping necessity of these two concepts is supported by the assumption of homogenous task burden levels among different agents (see the "Fear and Enthusiasm" section). We will therefore refer to the individual task area as the Identified task area from this point onward.

Along with the spatial conceptualization above, when questions about the definitions of "right" (moral) and "wrong" are translated in to what is "useful" and "useless" for the organization, the meaning for different stages could be expected and their character could be constructed as follows.

According to the 1<sup>st</sup> KOC stage members (Punishment Stage) the behaviors that cause punishment are wrong. We cannot apply the terms "useful" or "useless" here because the cognition of "theoretical individual" has not

yet been reflected to the organization; the organization's unidirectional bind to the individual stems from the organization's side. The "theoretical individual" is not a decision-making unit of the organization. He does not have a task. His consciousness exists in the moment, and he is much like a puppet. He defines his boundaries through the punishments and penalties for actions he committed unintentionally. He does not react to his environment enthusiastically due to his closed perception. Therefore, we cannot discuss motivation here. Excepting the rare presence of an organization member with serious psychotic disorders, it is not possible to come across such individuals in organizations. According to the 2<sup>nd</sup> (Task Stage) the things that do not contribute to the output of his tasks are useless, and those that do are useful. The member has gained control of a delineated area in terms of time, space, and complexity. "Meaning" has been achieved when the duties of the task area are fulfilled or maximized. This is why a behavior is classified as useless if it does not contribute to the outcomes of task area. According to the 3<sup>rd</sup> (Inter-task Concordance) Stage, the things that meet the expectations of the close network of (generally) directly interacted-with "identified task areas" are useful, and those that do not are useless. This stage has also been referred to as the "Efficacy Stage." The employee's domain of interest exceeds the borders of his task area. Other task areas that directly interact with the employee's area in terms of formal processes define this domain. Meaning has been achieved when the outcomes of this inter-task network are fulfilled or maximized. Things that do not meet the mutual expectations of this functional network are assumed to be useless. According to the 4<sup>th</sup> (System) Stage the things that preserve the continuity and integrity of the system (the whole organization) are useful, and those that do not are useless. The spatial cognition of the member reaches the borders of the organization, and the member is now aware of the remaining activities that fall within these boundaries, the complex relationships they establish, and the feedback loops. In a way not seen in the 3rd stage, these members approach problems in an "understanding why" manner. The concept of the future has become apparent because after one's understanding of the systematic relationships broadens, the realization horizon of these relationships moves further away in time. The continuity of the organization is the focal point of the quest for meaning. The lower parts of the system may be ignored due to the realization of this purpose. The individuals then comply with complex regulations because the harmony of the chaotic environment depends on the predictable behavior of its agents. According to 5<sup>th</sup> (Meta-System) Stage things that question the system and generate positive suggestions are useful, and those that do not are useless. The existing topology of the system is not irrevocable for meta-system stage members. If it is necessary, these members will question the system and generate positive propositional statements. According to stage 5 individuals, there should be repeated discussion about how the rules could be re-structured for the better. When this discussion is not on the agenda, this anarchical approach toward regulations subjects this evaluation to the 3rd stage. In this respect, Stage 5 members display a redesign attitude.

According to Maslow (1971), transcendence refers to connecting the ego to an entity that is greater than one's self or is beyond the material world (Rosso et al., 2010, p. 106). Things that serve transcendent truths are useful, and those that do not are useless from the viewpoint of members of the 6<sup>th</sup> stage (Universal) Stage. These truths might not conserve the presence of the system or its evolution. The "theoretical individual" at this stage begins to question the assumptions of materialistic thoughts, such as the following: "Happiness or organizational success depends on getting more materials." We cannot define this kind of individual as a member of an organization. This person looks through the eyes of an independent evaluator of the ongoing events.

### *3.3 The Switch Dilemma*

The "Switch Dilemma" was designed for common use and allowed us to obtain valid results. The final version is presented below:

"Imagine that you enter the production area of your company at a time that no one is around but you. You witness a machine producing defective products in the production line. If this continues, defective products will lead to high scrap costs, and the machines on the line will presumably be destroyed. The only way to stop the production is to turn off the main switch of the production field. (The machines are dependent on each other and cannot be shut down one by one. Turning off the switch will not harm you). However, according to the rules, turning off the switch is strictly prohibited, excepting the electrician. Penalties for violators of the prohibition have been applied in the past. In this case, would you turn off the switch? Why or why not?"

In Kohlberg's best-known dilemma, Heinz falls into a dilemma wherein he must choose between the death of his wife and being a thief. He cannot leave his wife to die but he also should not steal. The same situation is in operation for the person faced with the "switch dilemma". The member who witnesses the defective production cannot leave his company with damaged goods and impairment but he also should not disregard the rules. In both dilemmas, individuals are forced to choose between two undesirable situations. This situation is called "avoidance-avoidance conflict" in psychology literature. In Heinz's dilemma, one of the conditions to be avoided

is related to the rules that keeps the system operational.

In the dilemma, the information, “The machines are dependent on each other and cannot be shut down one by one,” emphasizes that continued loss could not be stopped by a partial execution. This augments the impact of the ongoing losses in the subject’s mind and the tension created by the contrast between the losses and their antithesis (the rules) grows.

In exceptional responses corresponding to the first versions of the Switch Dilemma, some subjects assumed that turning off the switch would damage the executor or other employees. They then shut themselves out of this possibility completely because of the importance of human life. The second sentence in the parentheses, “Turning off the switch will not harm you,” was added in order to prevent concern about this possibility.

#### **4. Oral Interviews**

The above assumptions (except the 6th stage) have been widely confirmed by the subjective study. For the interviews, we categorized the subjects into three main stages. Select interviews are seen in Tables 1 and 2. Others are seen in Appendix A. The interpretations of these interviews represent the subjective analysis of the subjects.

**About the Punishment (Pre-task) Stage:** In the pilot and further research, which involved nearly 550 subjects, the number of individuals who based their decision to regarding the switch dilemma on the possibility of punishment was very small. These individuals are believed to be close to the punishment stage, but they were combined with the task stage members for statistical analysis due to their small number. Some of these scarce examples are discussed below.

One subject said the following: “I wouldn’t turn it off because the factory has the power to diffuse the damage. But, after I get a penalty, I don’t have the opportunity to diffuse my loss.”

This subject expressed anxiety about the consequences of a possible penalty to himself. Subject M3 in Table 1 could also be labelled as a member who is close to the punishment stage. This subject used the assumption that electricity would harm him (he had been told that turning the switch off does not cause harm).

Interviewer: “There is no one around.” Subject: “Honestly, I wouldn’t turn it off because there is electricity. I would get hurt.”

Task stage members were interested in the ongoing damaged production, at least superficially; however, they refrained from interfering with the event because it was happening outside of their task area. Their typical answer was, “I don’t interfere because it’s not my duty.” Their excuse relates to the ongoing event, whereas those close to being punishment stage members focused on themselves. This is why they underline the punishment; the penalty is given to the person, not to the task area.

Another subject close to being a member of the punishment stage said the following: “I wouldn’t turn it off. The important thing is money, which will be in my pocket. If I turn it off and get a penalty, such as being fired, that can no longer make money. I mean a little reward is not important compared to my job. Taking a risk is not good every time, and the firm is not mine.” A clear selfishness is seen in this respond. On the other hand, we encountered some task stage members who seemed afraid of leaving their jurisdictions but who still stated, “This is the place where we earn our bread”.

Another possible close-punishment stage member stated the following: “I wouldn’t turn off the switch. Referring to the penalty, I don’t take risks and I wouldn’t turn it off. The machines are already getting damaged anyways. [We do not know why he had this idea]. I prefer firm’s loss to my suffering. I ignore it. I pretend to be unaware.”

In summation, members suspected to be close to the punishment stage (1) consistently talk about punishment and (2) are selfish. They deal with the most likely outcome for themselves when they decide whether to turn off the switch; they do not deal with the likely consequences of ongoing defective production. We used the term “pre-task” instead of “close punishment” to define these individuals. Subject M30 got a score of 45 out of 85 (max) from the Hierarchic Organizational Cognition Scale (HOCS) and placed among the bottom 9% of the 215 attendants in the main study.

**About the Task Stage:** A significant number of the 550 subjects (with pre-task members accounting for approximately 20%) were labelled as task stage members.

These individuals (1) have acted with task-oriented fear or (2) stayed passive (inert) while approaching circumstances that were not pre-defined, as predicted in the theory. The great majority of them declared that they would not turn off the switch. We thought that, behind the poorly justified, typical answers of the task stage members (who do not indicate punishment as a reason), there would be a fear of causing a greater problem by

interfering in an unknown area. This fearful response was also seen in members of the exceptional efficacy stage who had refused to turn off the switch. The important difference between them originates from their evaluation domains. Efficacy stage members evaluate the problem in terms of the consequences of not turning off the switch. They thought about the story. However, task stage members do not perform this kind of cognitive process. They assess any situation on the state of whether it is inside or outside of their known area. They seem to believe that going beyond their known area will lead to bad things. In fact, all members of this stage had this idea. This assumption and the situation of being passive are discussed further and in greater detail in the “Fear and Enthusiasm” section that appears later in this paper.

Table 1. Interviews

STAGE 2	STAGE 3	STAGE 4
<b>M3 / INTERVIEW:</b> S: First thing, I try to find the electrician. I: But there is no one around. S: Honestly, I wouldn't turn it off than. Because its electricity, I think I get harmed. <b>INTERPRETATION:</b> Subject is not organization-centered, instead egocentric. He declared that he would get harmed. (This is subjects assumption despite we told it wouldn't happen) He refrains from penalty. He could be labelled as pre-task.	<b>B5 / INTERVIEW:</b> S: I would turn it off. I: Why? S: If there is no one except me and if defected production happens, I prefer to get punished. My firm will incur a loss. Obviously, I don't condone; while I am aware of it. <b>INTERPRETATION:</b> Subject is going beyond to his jurisdiction for being useful but don't have comprehensive vision about the consequences of his behavior.	<b>E5 / INTERVIEW:</b> S: I don't turn it off. Because, if there is such a prohibition, it should be legislated for a reason. When I turn it off perhaps the machine will be broken completely. <b>INTERPRETATION:</b> The member attribute value to the rules. According to him the prohibitions should have reasons. He is a pre-system stage member.
<b>M6 / INTERVIEW:</b> S: I wouldn't turn it off. I don't do such thing in a situation which I am not in charge. I inform related authorities and behave in accordance with their instructions. <b>INTERPRETATION:</b> The cognition of subject is not going beyond his task-area (or jurisdiction). He is refusing to go beyond his identified responsibilities.	<b>E61 / INTERVIEW:</b> S: I inform the electrician ... hm .. the problem will get bigger till he comes .. hm .. I turn the switch off. I: OK. What about the penalty? S: We will endure the penalty, no way other. Instead of the loss of government, I lost my money. (The production firm is a public institution) I: What about, if we assume it is a private company? S: A private company consider the loss in such cases. I think they even give an award to me. <b>INTERPRETATION:</b> The subject is underestimating or not appreciating the value of the rules and the need for electrician. He is enduring the penalty for being useful.	<b>EY / INTERVIEW:</b> S: I wouldn't turn it off. Because such an event occurred before, this duty should have given to only electrician. I: Could you clarify more? I: There should be a reason. The cost of the defective product should be cheaper than turning off the switch by an un-informed hand. <b>INTERPRETATION:</b> The subject explicitly emphasize that the rules which is constituting the system has supported by past experiences. He pay importance to the system not to the apparent benefit. Afterwards he is discussing the advantages and disadvantages of not-turning or turning off the switch.
<b>BNK9 / INTERVIEW:</b> It changes according to the manager I connected. If I am good at with my manager and he is considerate, I turn it off. Contrarily if not, I don't turn it off. <b>INTERPRETATION:</b> Subject is selfish. He doesn't care out of his jurisdiction unlike 3 <sup>rd</sup> and 4 <sup>th</sup> stages do. An efficacy member wouldn't turn off the switch, but don't do that for personal interests.	<b>E30 / INTERVIEW:</b> S: If I am working in a firm I have got responsibilities. Defected production spoil the goods. Not only scrap cost is the problem. If products send to customers like that, it causes bigger problems. I: Briefly, you turn it off. S: Yes I: What you think about penalty? S: They approve my excuse. <b>INTERPRETATION:</b> The subject is defining the possible externalities of ongoing defected production successfully but he is not talking about the externalities which makes rules meaningful.	<b>ET / INTERVIEW:</b> S: How much will be the scrap cost when the production will be continued and how much will be the cost when the switch turns off. If I can count them, I do that first. Than I inform the authority. I: But you can't reach them. S: Than I compare the costs which will occur during the time till I reach an authority and the costs when I turn off the switch. My decision is also related with the thing that is produced. If it's not a very strategic product, I wouldn't turn it off. <b>INTERPRETATION:</b> The subject perform quite clear and comprehensive cost-benefit analysis. She deserves a strong 4 with her answers. But a meta-system style evaluation has not used. Her answer also comprise a contingency.
<b>B4 / INTERVIEW:</b> S: I don't turn it off. It's not my duty. I: Could you clarify? S: If it's a banned area, it's naturally forbidden to go and touch the switch. <b>INTERPRETATION:</b> Subject is not configuring the switch problem on benefit-damage opposition. He declares; he is not turning off because it is simply the rule. When questioned more, subject is not touching the possible reasons of the prohibition, he imply that an existence of prohibition is enough to obey.	<b>E59 / INTERVIEW:</b> S: I turn it off. I: Why? S: To avoid increasing the production cost. I: OK. What do you think about the penalty? There is a rule. S: They would punish me. It will harm me financially. I consider my company primarily. And I consider why my company would not give me a penalty. Because I act for its favor. I: You mean, I have a good reason? S: Yes, I am not acting for nothing. <b>INTERPRETATION:</b> The fear of the subject is based on the outside of his jurisdiction. However subject can't assign a comprehensive justification to the penalty. He is sacrificing himself for being useful.	<b>E18 / INTERVIEW:</b> S: In this case an authority should be informed. It says; somebody got punished. And if turning off the switch would damage to other machines (There isn't such information in the story) I would cause a 100 tl (Turkish lira) cost for 50 tl advantage. I: So, you doing this for not disregarding the rules. S: No, not for that. If I would be sure that turning off the switch will solve the problem, than I turn it off. <b>INTERPRETATION:</b> Subject evaluates the results of his possible behaviours by multidirectional perspective. While he states that he would disregard the rule, he also attributes a meaning to the punishment which applied before by assuming that machines would damaged when unauthorized personnel turn the switch off.
<b>AL15 / INTERVIEW:</b> S: I wouldn't turn it off. I: Why? S: It's banned. I: Wouldn't you accept the risk of getting punished? S: No I don't. Why would I? I don't, for myself. If someone else's life is at stake it can be. <b>INTERPRETATION:</b> The subject is rejecting to get out of his jurisdiction for selfish reasons.	<b>MU6 / INTERVIEW:</b> S: I turn it off. Because lets consider, so: It's going to damage other places, defected production happens, and the loss will be greater in the future. I turn it off. I: See, but somebody got a penalty before? S: You do your defence. You endure to the penalty and do your defence. <b>INTERPRETATION:</b> Subject is a typical 3 efficacy member. He is defining the externalities of ongoing defected production successfully but he is not talking about the externalities which makes rules meaningful. Also he is reducing the punishment in to its consequences only not to its reasons.	<b>A20 / INTERVIEW:</b> S: I wouldn't disregard the rule and don't turn it off. Because I don't know the degree of the damage would occur when I stopped the machines. Moreover, it has experienced before and happen bad things. <b>INTERPRETATION:</b> Subject is basing the raison d'être of the rules on the experiences. And he assumes a cost when the machines closed without electrician.

**Table 2. Interviews**

STAGE 2	STAGE 3	STAGE 4
E55 / INTERVIEW: S: I wouldn't turn off. I: You wouldn't... S: I wouldn't if there is a penalty. I: Because of penalty... OK, on the other hand defected production is going on? S: Firm should have precautions for that, for example beside the conveyor here there are safety ropes. If you touch them, it's stopping. I: The reason of your quiescence is your non-jurisdiction? S: Yes and you can't purify yourself, your duty is clear in your contract. But if you know that your manager would save you, it's different. INTERPRETATION: Subject is basing his behaviour on the penalty and not supporting penalty with a deeper reason. The indication of this is his declaration that he would turn off the switch in the absence of penalty. Subject could be labelled as pre-task.	E53 / INTERVIEW: S: I turn it off, personally. Because, if it's going to harm my company and it will cause the defected products... I: OK. What about the punishment? A penalty had given someone. S: In terms of workers health, it's reasonable to wait the authorized personnel but if I am authorized in that company, when it's needed I take responsibility and venture the penalty and I did it. But the penalty would be necessary too. INTERPRETATION: Subject indicates the worker health as a reason for the rule. (He was told that its not and afterwards he violated this rule.) This is not an enough explanation about the systemic relations of the ongoing event (defected production) for being a system member.	E23 / INTERVIEW: S: I run the rules I: Why? S: Because a scrap cost would exist in that case, right. For example if I produce in an amount of 1000 tl per month, the incident I noticed at that moment should be one in a thousand. I prevent it if I turn it off. But by turning it off I destroy the rules and I spoil the overall order of my company. In this case, enduring to a small cost is cheaper than loosing the way which I draw for my company. (The subject is the owner of the company) INTERPRETATION: The subject can ignore the short term benefits in behalf of the macro and long term values. In this case he approaches to short term benefits as the purposes which could spoil the regulations that puts the system together.
MU15 / INTERVIEW: S: I leave it to the electrician. I don't turn it off. It's not my business. Everybody should know his own task. I just inform. I: But there is no one around. S: Could it harm to me, if I turn it off? I: No, no way. S: You asked such a hard question... If I don't turn it off, machines will be destroyed. If it will not harm to me I would turn it off then. I: But, a penalty has been applied in the past. I: Ahaa.. I don't touch it then. It's not my business. INTERPRETATION: When the penalty reminded him, the subject put aside his other reasons and gave up to go beyond his jurisdiction. Subject could be labelled as a pre-task stage member.	E60 / INTERVIEW: S: It should have turned off. Because quality of the products will be bad, and it will cause cost. For preventing it I have to turn it off. Because you cause the company in loss. I: What about the penalty? S: The loss of the company will be bigger than the penalty. Maybe I will endure a penalty of one salary. On the other hand, millions of financial loss will accrue to the employer. INTERPRETATION: Subject don't hesitate to go beyond his jurisdiction and can't see the reactions of stopping the ongoing defected production and underestimating or not appreciating the value of the rules.	A19 / INTERVIEW: S: If in previous blackouts, after the unintended closure of the machines caused a big cost, I don't turn the switch off. If the costs of defected products are bigger than the cost of suddenly machines I turn it off. It's banned but if someone turn off it like this, by deciding in favor of company, he shouldn't get punished. INTERPRETATION: The subject performs a quite clear cost-benefit analysis. He deserves being a system member.
E58 / INTERVIEW: S: I wouldn't turn it off. I inform authorities. I: But you can't reach them according to the story. And defected production is going on. Are you sure you will not turn it off? S: Because it is something beyond my knowledge, for not making a mistake I don't interfere. I: What kind of mistake would it be? S: So, the mistake there ... it should be done if switch turned off ... I can't know if it's safe or not, it's an electricity. I don't know, OK I want to act but I could have risked my life. INTERPRETATION: The subject is unassured outside of his jurisdiction. His reason of not turning off the switch is the fear he felt against this unknown environment. He is sensing a mistake in turning off the switch but he hasn't got knowledge to support this sense. That's why, when the reason of his passive behaviour had asked him; first he struggled to find related reasons but eventually he could only indicate the endangerment of his life as a reason.	E62 / INTERVIEW: S: Now, if human life is subject of discussion ... I: No. It is not. The production is defected and you can't reach to the electrician. S: I turn it off because I have got responsibilities towards my company. For the goodness of products. I: OK. There is a penalty. What you think about this? S: But, is it the employer who establishes the penalty? I: Yes, sure. S: But, there is an ongoing loss; they will already apply penalty if we don't turn the switch off. I: There isn't any information about that in the story. S: OK. It's unreasonable because.. A worker turns it off, logically, because of eating bread from here. INTERPRETATION: The subject is internalizing the event in the dilemma. That's why he is not a 2. However he stated that he can't assign any logic to the rules and the penalty. He is so sure about turning off the switch.	MU16 / INTERVIEW: S: I don't turn it off. There is a rule there. That rule says: the educated personnel should do that. Not for getting punished, but there is a chain there that rules are running. That duty given that person. Because I don't have any information on the event. If I turn it off, some other things would happen. I: What kind of things they are? S: We should consider what would happen when we stop the production. There could be a compensation for defected products, when the authorized personnel stop the production you may go on smoothly, but we don't know if there is a compensation for the factory. My behaviour would be related with risk factors. INTERPRETATION: The subject stated in his first sentence that, his not turning off behaviour is not related with his jurisdiction. And also he stated that he is not afraid of penalty. He can't be a task-stage member. And he can't be an efficacy stage member due to his comparison of different scenarios.
MU5 / INTERVIEW: S: I wouldn't turn it off. I: You wouldn't turn off... S: First: Turning it off is not in my jurisdiction. Second: I inform an authority. I: You can't reach any one in half an hour. And life safety is not an issue. S: No, I don't. I am not in charge. I can only inform. I: Because you fear of punishment? S: A kind of. Penalty and responsibility (are my reasons) at the same time. INTERPRETATION: The subject indicates his irresponsibility as a reason for not going beyond his jurisdiction. As broadly discussed in 'fear and enthusiasm' section, a fear of creating a bigger problem by interfering to an unknown area, lies behind the poor justified responses of task stage members.	MU4 /INTERVIEW: S: I turn it off. Why? Because, every defected product diminishes our country's capital. It's loss, its workers loss, its the loss of this factory. I stop it. I am consent to the penalty. We are here for our nation. INTERPRETATION: Stating that he would sacrifice the subject indicates that his behaviour is not a result of an obligation. That's why he can't be a task stage member. He is not also a system member. Because he is estimating only a single kind of consequence to his behaviour.	E68 / INTERVIEW: S: First, what is my authority degree in the company. I: It's not very meaningful because the rule says that, if you are not an electrician you are not allowed to turn it off, whoever you are. You disregard the rule when you turn it off, even if you are the owner of the company. S: If it's banned in a company, there should occur other costs when that switch turns off. I mean, when you turn it off for stopping defected production, some other defects happen in other dimensions. Thereby, the legislator would think better than me. He knows what I don't know. Thereby I don't turn it off. INTERPRETATION: Subject seems a clear 4 despite the interviewer did superabundant explanations.

*Note.* In table 1, 2 and Appendix A: 'S:' stands for the 'Subject' and 'I:' stands for the 'Interviewer'.

It was observed that some exceptional task stage members highlighted an obligation while justifying their behaviors. A few task stage members who declared that they would turn off the switch attributed their initiative to an obligation that overrides their own will. In other words, they were not pleased to turn off the switch (they were nervous while answering during the interview) but they were going to turn it off because the job definition that they built for themselves offered no other alternative. They were compelled to turn it off.

In an extraordinary example below, the task stage member encoded as M2 declared that he would interfere in this situation, which exceeds his task, but that he was bound to this action rigidly by obligation. Thus, obligation leads to action.

Subject: "I turn it off, in any event... Eventually, somebody has to do it. I have to take on the task because there is nobody there. For example, if this table here broke down and I am here, I am compelled to handle it..."

It is not easy to distinguish these exceptional (we encountered 4 such members out of 550) members from typical efficacy stage members. Stage 2 was often identified in primary and secondary school graduates and blue-collar workers. The answer above was given by a primary school graduate.

Members of this stage exhibit the following properties. (1) They are passive in principle and exhibit an avoidant attitude while confronting problems if said problems occur beyond their zone of responsibility. (2) They do not show much interest in issues outside of their jurisdiction. (3) They regard their defined duties as superior to other organizational interests. (4) They mostly act with a sense of fear-based obligation. (5) They do not react much to penalties. Their typical answers can be summarized as the following: (a) I would not turn off the switch because it is not my job (or it is the electrician's duty); (b) I do not touch the switch because the problem is not under the jurisdiction of my assigned position; and (c) if I do not have authority and responsibility for that department, I do not touch the switch.

**About the Efficacy Stage:** Efficacy stage members (approximately 60% of the subjects) mostly declared an action without fear of going beyond their jurisdiction, taking initiative. They attempted to be useful to their organization without comprehensive and long-term thinking. Situations that are not pre-defined are approached with an attitude of improvisation and heuristic behavior by members of this stage. Improvisation arises from a lack of appreciation for the rules. This lack of appreciation arises from a lack of cognition regarding the overall complexity of the system as a whole. This is why they prefer taking actions that benefit their close network in favor of a larger one. In this empirical study, a great majority of the subjects who exceeded their task areas did not display a comprehensive cognitive assessment process, which is illustrated as follows: (1) they did not attribute enough value to the rules, and (2) they could not foresee the possible harmful effects of turning off the switch. We cannot reduce their character to merely their choice to turn off the switch. On the contrary, this behavior is a partial manifestation of their task-exceeding cognition of the dilemma.

An uncommon efficacy stage member who declined to turn off the switch said the following: "No I would not turn it off because it could damage the firm's equipment. I would inform authorized personnel."

This member did not say that it is not his duty; he implied that he would turn it off if he decided that action is more useful. However, he is not a system stage member because he neither attributed the decision not to turn off the switch to rules nor compared the potential results of the two actions.

The typical answers given by members of this stage are as follows. (a) I turn off the switch. We all earn out bread here. (b) I definitely turn off the switch. My reason for being here is to serve my company. (c) I turn it off, whatever the result is. I bear the punishment. (d) It is useful to my company that I turn off the switch. I believe my company will not punish me for this. (e) I do not turn it off. Doing so can lead to a larger loss (exceptional answer). (If one of these conditions are in operation without a comprehensive evaluation and without reference to the regulations, then that member is presumably a system stage member).

**About the System Stage:** We detected another small (approximately 20% of the respondents) group that mostly consisted of highly educated white-collar individuals. They have a tendency towards (1) making a comprehensive cost-benefit analysis and (2) understanding that rules and regulations emerged from accumulating experiences in response to past results. Such employees performed high mental activities and were more conservative in terms of the status quo of their organizations than were efficacy stage members (they predicted more consequences for actions, like 3<sup>rd</sup> stage members, and also likely reactions to their actions). They seemed to know that they could not fix everything easily by just entering the system, and they were aware of the power balances. They approached situations that were not pre-defined in the light of current directives. Very few of them stated that they would turn off the switch and that their own loss would be a good trade-off for the system's overall benefit. In these rare answers, members implied that they would do it without underestimating the rules;

they appreciate the value of the rules and attribute the decision to disregard them to their inadequacy. Actually, an emphasis on inadequacy would typically be related to 5<sup>th</sup> stage members but these subjects did not attempt to redesign the rules. Understandably, stage 3 members did not refer to the rules, so they were not required to disregard them. They accepted the current regulations as status quo but considered the benefits of disregarding them.

The concept of being useful is often framed by consenting to penalties. Thus, stage 3 members talk about penalties if necessary (second stage talk more) but stage 4 members talk about rules. Penalties are manifestations of the status quo but rules are its origin.

We will now give one exceptional example of a stage 4 member and compare it to an efficacy stage member; both are proponents of turning off the switch. The following subject could be labelled neither a 3 nor a strong 4 during the assignation: "I turn off the switch... because that problem is not just my loss; it is the loss of all employees and the employer. If I turn off the switch and still I get a penalty, then that means I have taken the penalty. However, my firm would get rid of a great loss."

The efficacy stage member said the following: "...I turn off the switch... I know that every defected product that I miss will cause greater problems. That is why I face a little punishment, and turn it off. I know I can explain myself. I don't believe I will get a penalty."

The efficacy stage member minimizes the penalty by assumptions because the level of punishment has not been transmitted to him before. This minimization may give us an idea about sacrifice tendency. The size of the sacrifice must be closely related to the size of the perceptual environment where the sacrifice is made. The member of the 3rd stage believes that he has very good reasons that will prevent his being punished. The other member, however, accepts the penalty without denying its likelihood; this means that he respects it.

The common ground of the exceptional system stage members that choose to turn off the switch is that they generally express that penalties are meaningful but could not find a way to avoid being subjected to them. Beyond these assessments, the most important thing separating system stage members from efficacy stage members is the presence of a cost-benefit analysis. Since there are plenty of examples in Table 1 and 2 as well as Appendix A, this phenomenon will not be exemplified.

Other characteristics of system stage members could be summarized as follows. (1) The perceived need or wish for the continued success of the system as a whole actuates them. (2) As stated in the theoretical section, members approach problems in an "understanding why" manner. (3) Members are motivated by the prosperity of the system. (4) The interests of the system are preferred to the interests of sub-systems. Their typical answers were as follows. (a) Which action costs the most? I evaluate it, and then act (with a comprehensive cost-benefit analysis). (b) I cannot foresee the cost when I turn off the switch. That is why I trust the guidance of the regulations. (c) I would not turn it off. If there is such a rule, then there must be a good reason for it.

Table 3. Exceptional and common approaches to the switch dilemma

	Stage 2	Stage 3	Stage 4
<b>TURN OFF</b>	<b>EXCEPTIONAL:</b> Attribute their initiative to an obligation which override their willpower	<b>COMMON:</b> Attempt to be useful without comprehensive thinking. Also underestimate the rules.	<b>EXCEPTIONAL:</b> %1: Don't underestimate the rules. Attribute the reason of disobeying to the inadequacy of rules (without re-designing them)
<b>NOT TURN OFF</b>	<b>COMMON:</b> Don't use a cognitive process on the event. Or afraid of punishment.	<b>EXCEPTIONAL:</b> Considering the event. Decide that, turning off would cause bigger problems (without comprehensive analysis)	<b>% 49:</b> If there is such a rule, there must be a good reason OR It might cause a bigger cost (comprehensively)
<b>COMPREHENSIVE ANALYSIS</b>	EMPTY	EMPTY	<b>% 50:</b> To turn it off or not Which action costs much?

Table 3 summarizes the members' exceptional and common approaches to the switch dilemma. We are uncertain about separating the 4th stage into two parts, like the pre-system stage (simpler cost-benefit analysis) and system stage. Pre-system stage members do not calculate the costs and benefits of both decisions like strong 4th stage members do, but they simulate in-depth the possible outcomes of the action they chose unilaterally.

**About the Meta-System Stage (Subject 5):** 350 days after the start of the study and after having interviewed approximately 500 people, we encountered a person who met the requirements of the meta-system stage. We labelled him as “subject 5”.

Using statistical analysis, this subject was evaluated with the system stage members. He is a mechanical engineer in his thirties and working as the production manager of a medium sized production enterprise. His interview is shared below.

Subject 5 (S): “I turn it off.” Interviewer (I): “Why? S: “If I don’t have any other options, I try to stop it... hmm... but you say I can’t do that [due to the rule]... but the machine should have an emergency stop.” I: “This switch is something like an emergency stop. However, the rule says, ‘You cannot push the emergency stop.’” S: “Then that means the rules are inadequate. While defected production goes on, having such a rule without considering this option may be a shortcoming.” I: “Then, what do you think about the penalty? Wouldn’t you hesitate to turn it off?” S: “If there is a switch there, and it’s forbidden for unauthorized personnel to turn it off, then this switch should be protected by a lock. People have different intelligence. If there is such a rule, the legislator should design the environment so unauthorized personnel couldn’t reach the switch. By doing this, you would obstruct people from reaching it, and you also prevent them from getting a penalty.”

Subject 5 implicitly assumes that if it would be right for someone to turn off the switch in exceptional situations, then the rule is wrong. Subject 5 implicitly states that the present rule in the story does not satisfy the requirements of the complex and unforeseeable realities of an organizational environment. Then he asked how the rules and processes could be redesigned for the better, and he also answer his own query. According to him, rules should be standardized according to the avoidance of human initiative. By doing this, subject 5 introduces a positive thesis that redesigns the organizational structure. He transcends the options offered by the switch dilemma, showing that the switch should be inaccessible. None of the white-collar individuals among the 550 subjects exhibited a redesign approach to the switch dilemma, except him. Subject 5 received a score of 64 from the HOCS, and he was placed in the top 14% slice of the main study’s 215 participants.

Meta-system members should theoretically exhibit high independency while acting. In a Milgram obedience test (Kohlberg, 1969), 75% of stage 5 subjects stopped administering severe electric shocks to the victim while only 13% of lower stage subjects quit. They showed independence and confidence. On the other hand, efficacy members either rely on the power that legislated the law they disregarded by having justifications, or they rely on a basic belief that the rules are not meaningful in all circumstances (See Appendix A: E32 [“Frankly, I obey the rules I think logical. I don’t obey the rules I think illogical.”]. See also: E31, E74, and E90).

## 5. Theoric Projections

Based on Wilber’s (1993) term of “unity consciousness” (Merter, 2008, p. 130), each orientation of the individual towards inexistence by self-renouncement is principally the water drop’s quest to join with the sea. This quest appears in different forms. As Wilber (1993) said, “man is identified with the universe,” then creates desires and related fears. Individuals make decisions toward achieving these desires, learn through the consequences of these decisions, and contribute to the construction of collective reality.

### 5.1 Fear, Enthusiasm and Inertia

Fear is an emotional response induced by a perceived threat (Niles, 2014). When an individual climbs to a higher KOC stage, the origin of the facts that he reacts to shift from the specific to the general, from concrete to abstract, from a narrow space and time to a wide space and time, and from his own task area to society. The inertia against undefinable or unperceived (not unknown) environments gradually decreases. Imperceptiveness originates from the absence of perceptiveness. Fear cannot arise against imperceptiveness. Therefore, this study has a dialectical, stimuli based definition for inertia and fear, which work in conjunction and always combine to form one entity. The first phenomenon, (1) Inertia against the unperceived, originates from the area that transcends the cognitive borders of the individual. However, according to our examination, inertia does not always emerge from pure imperceptiveness. Its nature is ambiguous.

It emerges in the following situations: (a) When a subject could not or did not perceive an event should be able to detect it; (b) when the subject perceives the event superficially but could nor or did not consider all possible consequences; and (c) when a subject does not attribute meaning to the sample space. A small portion of the task stage members did not establish any bond with the ongoing event in the story; they cognitively avoided thinking about it or its consequences. We cannot know if some part of this group would coincide with the first situation above (a). Naturally, we cannot control for it in this situation. The pure imperceptiveness could only occur when the object or subject have not been shown to the perceiver. In this respect, we cannot observe this with the

current observation style. We could easily assume that all of the task members entirely understood the event when they listened to the switch dilemma but could not or did not consider the results of their options (See typical examples of this in Appendix A: E29, M17, M24, H3, and H12). The rest discussed the consequences slightly but did not attribute meaning to them (See typical examples of this in Appendix A: M33, E8, and M9). In the interviews, the last one usually happened. As theorized, a task stage member seeks no further meaning once he/she accomplishes the assigned task. Turning off the switch, or not, has no relationship with the task. (2) Fear of inability to reach originates from the targets or results that are (a) defined by the individual or (b) defined for the individual by an authority. Fear requires an awareness of the sample space. People try to reach the consequences they believe that would occur (Festinger, 1957). Here, the term "threat" in the definition of "fear" is the possibility of not achieving results. Uncertainty or risk is in question for the member who feels this fear.

In Figure 2, the relative positions of three types of fear and the projections of the last one (frf), which are both alive simultaneously, are defined for each KOC stage. The inertia phenomenon has not been included. In Figure 2, (a) "Fear of not reaching personally identified desires" is represented by "frf" (fail to reach fear). We also refer to this as endogenous fear. In addition, (b) "Fear of failing to fulfill the identified task" is represented by "tf" (task fear). We also refer to this as exogenous fear. These two types of fear take part under the concept of "Fear of inability to reach." The term (c) "Inertia against the unperceived" is represented by "Iu" (inertia and unperceived).

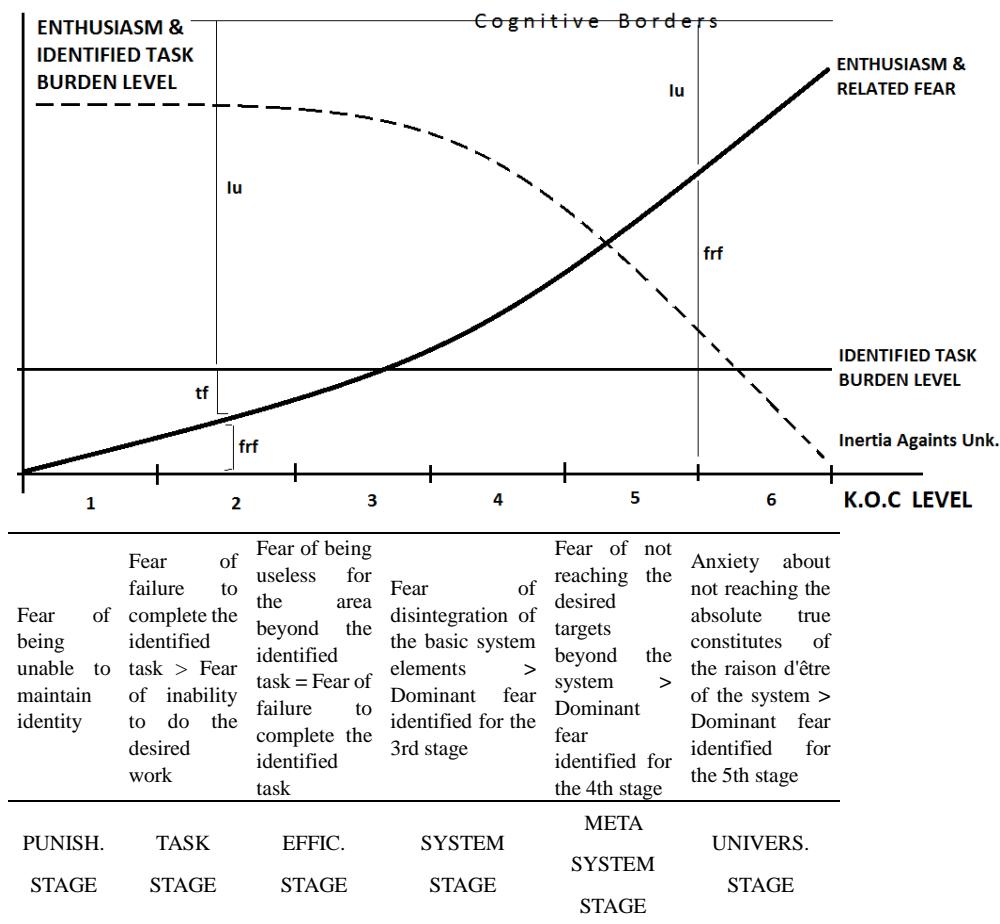


Figure 2. Fear, enthusiasm and inertia

We will not probe the fear of theoretical punishment stage members here. Still, we should mention that it should be tightly coupled to the pains caused by punishments. In other words, this desire is for a return to the mental state that does not involve any desire.

The enthusiasm level is shown by the escalating curve, which creates "frf." When this curve is under the

“identified task burden level,” the “tf” began to identify the fear and prompt the individual toward behavior. The fear in that region begins to arise from the possibility of not being able to fulfill the task. The “identified task burden level,” which is shown by a horizontal line, creates the “tf” and it is equal for each individual under normal conditions because, in the medium and long terms that systems organize themselves, individuals are not under burdens that they cannot overcome. For this reason, we cannot say that the level of formal task originated fears are differentiated between individuals, theoretically. The “Iu” level (discrete curve) continues horizontally at a high level until it reaches the 3<sup>rd</sup> cognitive stage, and it begins to decline when the enthusiasm level exceeds the “identified task burden level”.

Efficacy stage members are aware of the sample space (things would happen when turned off or reversed), and they attribute meaning to these consequences. However, they cannot identify the results as well as can system stage members. There are many positive results tied to turning off the switch for efficacy members. They shared them during their interviews. However, if they were not questioned, they normally did not indicate any reason for not turning off the switch. However, when questioned further, 68% of efficacy members could not think of any reason for not turning off the switch and the reasons given by the remaining 32% were limited to just one topic: Labor safety.

On the contrary, most of the system stage members identified the possible consequences of turn off the switch, or not doing so, fluently. They could perform a cost-benefit analysis because of this fact.

According to Heisenberg’s uncertainty principle and Einstein’s complexity of theories in the field of risk analysis, Haines (2009, p. 1653) assert the following. (a) To the extent that risk analysis is precise and simple, it is not real. (b) To the extent that risk analysis is real and complex, it is not precise. The current risk is simple and clear for efficacy members. They have used the following statements: “I definitely turn it off,” “Of course I turn it off,” “Certainly, I interfere,” etc. However, their judgements are far from being correct. On the other hand, the risk perception of system stage members was complex and inexplicit, so their answers were highly situational. The usage frequencies of clear certainty statements (not a subjective inference) for the different stages of the 230 respondents were dispersed as follows: 4 times among the 46 task-stage members (8%), 21 times among the 134 efficacy stage members (15%), and 1 time among the 50 system stage members (2%).

Theoretically, the individual situated in the first stage is not attracted to any image of the organization. The individual situated in the sixth stage does not fear for the integrity of the organization and its structure. His fear is of the inability to reach the absolute truth. Indeed, all organizational orders are dispensable in the name of abstract truths (presumably to be reconstructed) between these two extreme forms. For example, in the 2nd stage, “tf” covers a wide area of the members’ cognitive world. Compared to this, the desire to perform anything (in other words, “frf”) will occupy a relatively narrow cognitive space.

Maslow (1954) did not anticipate a conceptual relationship between human needs and cognitive capacity in his hierarchy of needs theory. However, he attributed the interest in self-actualization towards the unknown to their intellectual capacity:

“It was found that self-actualizing people are far more apt to perceive what is there rather than their own wishes, hopes, fears, anxieties, their own theories and beliefs, or those of their cultural group... These people are the intellectuals, the researchers and the scientists, so that perhaps the major determinant here is intellectual power.” (Maslow, 1954, p. 154)

Maslow (1954, p. 70) states that high-level needs suppressed until lower-level needs have satisfied. In other words, different needs of the hierarchy simultaneously exist on each other but high-level needs cannot cause behavior unless the dominant primitive need satisfied. This mechanism is embedded into the psyche of the individual. The cognitive ability of the individual builds an environment which the hierarchy of Maslow would self-actualize itself without loosing its own integrity. In this understanding the perceived environment does not create needs, it situates in a position which prepares the ground for their (needs) emergence. The needs can not appear on an un-perceived or can’t perceived physical environment. When individual begin to perceive a wider environment, he also begin to perceive new organizational desires because the needs embedded into the psyche of the individual (regardless of which hierarchical level the individual is settled on) could be satisfied by the reconstruction of perceived irregularities of this new field of interest and their association with individuals’ ego. So the individual feel new organizational desires when his cognition expands and perceived success options get increase in terms of both quantity and quality. When this happens, ‘inertia against the unperceived’ (Iu) transform into inner-fears, namely a larger environment begins to be identified by individuals cognitive map. Thus the situation of remaining unresponsive to external factors gradually decreases and possibly a decrease in self-confidence will be observed referring to Dunning-Cruger Syndrome (1999).

Any system could be defined as the imprisonment of an unpredictable environment by predictable environmental regulations. In this regard, inertia is unusual for a member of an organization that continues to survive. Inertia is unusual (rare) because the organization places the member into a virtual universe (identified task area) that simplifies the complex external world. However, this theoretical assumption usually does not work while the imperfect structure of an organization stretches to compensate for environmental fluctuations, namely challenges.

The switch dilemma presented in the story occurs on the cognitive level of 3<sup>rd</sup> stage members. When the story of the dilemma was related to the redesign of the organization, than the inertia of 4<sup>th</sup> stage members was reflected in the interviews. In this regard, the same situation includes the theme of inertia for a task stage member but includes the theme of risk for an efficacy member. In an exceptional example (see M2 in the “About task stage members” section), the subject dragged the switch case to his task area with a self-created assumption and brought it into his realm of obligation. Similarly, if the story of the dilemma were organized to take place in the task area of each individual, we would observe that task stage members do not conform to the norms of their identified task area in all events.

The fear and enthusiasm paths sought in the interviews were found as predicted. A pre-task member of the pilot study reflected his fear: “I wouldn’t turn off the switch. It may lead to my dismissal, since it’s not my task.” The fear has materialized on the assumption of the subject. He does not understand the area beyond his jurisdiction; that is why he assumes the worst possibility (dismissal). No given information had stated that the penalty was dismissal. A task stage member exhibits his inertia in the following statement: “Of course I don’t turn it off because I don’t know about it, of course... or I am not responsible.” An efficacy stage member said the following: “I turn off the switch despite the fact I would get punished because, as it said, it creates cost. It’s a big cost for us and for all workers here. It should be done to avoid bankruptcy.” This subject has oriented his fear toward bankruptcy. He is not afraid of what would happen to himself. However, whatever the answers were, we have not encountered a task stage member who ventured any risk consciously. A system stage member exhibited his fear: “... When we compared the losses incurred during the non-productive days and the scrap cost that will occur until the electrician can be found, it is logical to venture the destruction of other machines.” Here, the fear of the member refers to a longer period of time in comparison to an efficacy stage member.

An observation of the interviews revealed some of the respondents’ emotional tones. It was seen that while 12 task-stage subjects and 5 efficacy-stage subjects used statements that indicated their fear of punishment, only 2 task stages subject and, conversely, 41 efficacy stage subjects used statements about enduring punishment. None of the system stage subjects used either.

### *5.2 Synchronic, Diachronic and Proxichronic Nature of Organizational Behaviour*

It would be meaningful to discuss the roles of different KOC members in organizations in terms of the interplay between the individual and the collective mind. According to Cattaneo (1801-1869), the link between the “individual mind” and “society” is established through the collective process of recurrent social interactions. These interactions are made possible by two forms of continuity and innovation: synchronic and diachronic. The synchronic dimension can be defined as the dynamic totality of endogenous social interactions, of material and symbolic artifacts at a given moment of the history of a human society. The diachronic dimension instead represents both the development of these interactions and artifacts throughout history (Tateo & Iannaccone, 2011, p. 58). When these two terms are reduced to the organizational level, they begin to represent the individual and collective aspects of the organization.

According to Tateo and Iannaccone (2011, p. 61), since “hegemonic” collective representations (Moscovici, 1988) are expressions of the social consciousness that dominates the individual, some individuals under the same social influences end up autonomously developing similar representations. We are also familiar with the nature of contrarian individuals due to Asch’s (Levine, 1999) conformity experiments.

The generative process of cultural development takes place through two different mechanisms. The first driving force is the appearance of “genius,” the individual’s ability to turn his experience of the world into discovery. The second driving force is constituted by “the common people, unaware of academic debates but confident in their capacities and aspirations for better life prospects” (Tateo & Iannaccone, 2011, p. 59).

It is interesting to note that the common and unconscious innovators of organizations would be efficacy members. These workers make structural errors visible by not obeying the regulations, as seen in the interviews (Why was the switch not locked?). They unknowingly test the validity of the rules (templates) in situations that had not been encountered until these heedless members interfered. The system stage group also does so by applying the regulations unfailingly while a radical change occurs in the environment. Only rare members (meta-system)

attempt to redesign the structure consciously. The system group carries evolutions into the future. That these three types act as supporter agents of the panarchical creation-destruction process of organizations in the long term is a theoretical assumption that should be discussed. While the connectedness of system elements or the determinism degree of the system is increased by the actions of heedless members (under the condition of a lack of buffers), heedful members carry on these more efficient but now inflexible configurations by adapting the system to an imagined future point wherein an environmental shock causes complete demolition. A strong need for “proxichronic” members arises under these new paradigms.

We developed the term “Proxichronic” or “Proxronic” to describe the behaviors of meta-system stage members. The term is composed of the parts of two words: *Proximus*, which is Latin for “next” or “future” and “chronic” which means “perpetual”. This term connotes the cognitive-dynamic integration of the diachronic artifacts and designative templates of the future at the individual level. The future side does not transcend the diachronic templates. It represents the developed paradigms of cumulative knowledge, culture, and regulations.

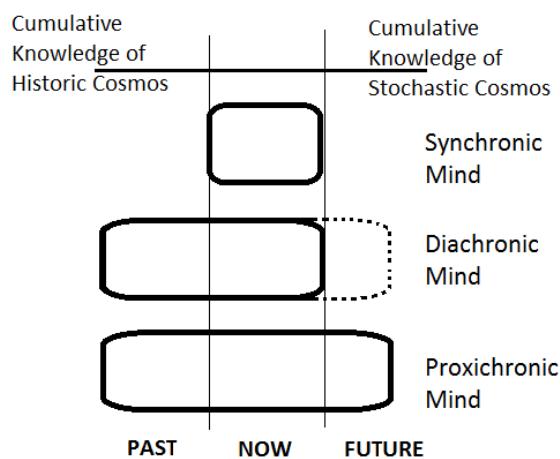


Figure 3. Synchronic, diachronic and proxichronic minds

In Figure 3, any vertical line that crosses the x-axis expresses the total theoretical knowledge accumulated between that point and “now” which the individual would be exposed to and naturally comprehend a small part of, if he or she could cognitively reach that depth.

Weick (1979, p. 133) stated that most organizational interpretations comprise recorded history. This means that we can understand the meaning of our actions immediately after the event occurs. However, according to Elkjaer and Simpson (2013, p. 77), an agent could only understand an event after he subjects that event to both history and future prospects. Pierce (1878) indicated that the expected results of today’s actions are the source of meaning, which Ajzen and Fishbein (1980) theorized on a psychological level. According to the concept of Pierce, hypothetical actions are designed for the future, and history is used as a source to create these hypotheses. The imagined result drawn from these sources supports the actions taken (Elkjaer & Simpson, 2013, p. 77).

In these discussions, foresight depends on the degree of comprehension of the past. Efficacy members become subjects of synchronic interactions. They predict short-range consequences for choices and then act because they are not able to use a wide-ranged history to support their expectations. System members evaluate the current events’ future consequences under the light of organizational memory and become subjects of diachronic interactions. They foresee the future but, unlike meta-system members, their predictions are only supported by their limited historic knowledge. Meta-system members use independent (individual) domains of reference while supporting their future oriented evaluations, and they become subjects of proxichronic interactions. They design new systematic templates that invalidate the system-bounded future possibilities of their current actions. In other words, diachronic agents may go further in the time line, like proxichronic agents, but they follow system-bound paths.

## 6. Developing the Objective Scale

Stanley R. Kay has comprehensively criticized J. R. Rest’s studies, “New Approaches in the Assessment of Moral Judgement” and “Defining Issues Test” (DIT) in his study of “Kohlberg’s Theory of Moral Development:

Critical Analysis of Validation Studies with the Defining Issues Test.” Rest had developed DIT to confirm Kohlberg’s work from different angles. Briefly, Stanley (1982, p. 27) mentioned that this test was introduced to overcome the lack of Kohlberg’s procedure; though, it is faced with serious methodological and conceptual challenges.

The objective scale of the present study is not a subject of the criticism addressed in the paragraph above. Primarily, this study abandoned the identification of Kohlbergian stages by using an objective scale. It was not developed to assign individuals to Kohlbergian stages. It was developed to confirm the hierarchical positions of segments that were determined by interviews to be hierarchically positioned as predicted in the KOC approach.

While developing the Hierarchic Organizational Cognition Scale (HOCS), it was contemplated whether accepted IQ tests would be useful. However, IQ tests are time consuming and they should be conducted in quiet environments. They were not suitable for fieldwork and industrial use. The Educational Testing Service (ETS) Kit (Ekstrom et al., 1976) or Logical Reasoning Test (LRT) are also time consuming. ETS takes about 45 minutes per person (Babcock & Laguna, 1997), and LRT takes about 19.6 minutes (Cesur, 1997). Therefore, we decided to work on a simpler perspective with statement-based scales, and we have determined the scales that we think will indirectly measure the phenomenon of comprehensive thinking.

### *6.1 Basic Study*

Measures: The reference scales for measuring the phenomenon of profound or comprehensive thinking are as follows. (1) The “Robert Wood Johnson Foundation’s System Thinking Scale” conducted a related study with the purpose of developing a reliable scale for measuring General Systems Thinking (Moore et al., 2010). (2) “The survey questions of surface and deep approach” from “Student Approaches to Learning and Studying” was developed by John Biggs (1987), who segmented the learning styles of individuals by different dimensions. (3) “Robert J. Sternberg’s Thinking Styles” is a scale wherein global style indicates the level at which the individual deals with the whole picture, the interrelations of the system elements, and the horizon of the events. In this scale, local style indicates the level at which the individual deals with specific, isolated, singular problems rather than multiple and abstract problems (Sternberg, 1997, pp. 60-61). (4) About 60% of the HOCS comprised original statements centered on the spatial environment, time, and complexity.

The HOCS levels were objectively measured by using a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). The firm’s size and demographics as well as task information, educational level, and working periods of the company workers and their network positions were assessed using open-ended questions. All interviews were conducted in person and voice records were taken. The HOCS was applied by the subjects themselves. Both the interviews and the questioning took approximately 6 to 8 minutes for highly educated personnel and 9 to 14 minutes for less educated individuals. In this respect, we have two coherent scales that are easy to use.

During the development process of the original items, two academics and one experienced businessman justified the meaningfulness of the items. The suitability of the prototype questionnaire was pretested several times in several mid-sized firms located in Çorum, Turkey.

Data Collection: The basic study data were collected between January 2014 and spring of 2015 via semi-structured interviews using the “Switch Dilemma” and a Likert-based HOCS from seven different sectors with eight corporate firms. They are summarized as follows: (1) radiator production firm with 220 personnel; (2) metal block production firm with 250 personnel; (3) chipboard production firm with 800 personnel; (4) sugar mill firm with 300 personnel; (5) metal molding firm with 60 personnel; (6) white appliances production firm with 850 personnel; (7) button production firm with 200 personnel; And (8) ceramic sanitary wares production with 900 personnel. We focused on the manufacturing sector due to our constraints on time and workforce as well as the need for a specific dilemma for each different business area. Five of these companies mentioned above were settled in the city of Gebze, in an industrial zone situated in the north-west part of Turkey. The other three are settled in the mid-sized city of Çorum in central-north Turkey. The Gebze district was preferred due to its place in the center of the Turkish economy for manufacturing sectors. Owing to the highly time consuming nature of the interviews, we could not use a stratified sampling plan while selecting our firms; however, we paid attention to their sizes and their institutionalization degree.

Selection of the respondents was based on organizational contacts who helped us connect with randomly selected blue, grey, and white-collar subjects. Of the 228 respondents, 13 have partially applied the HOCS, so statistical analyses were performed by 215 respondents. The 228 respondents of the main study were dispersed as follows: 70 of the subjects were classified as blue-collar, 87 as grey-collar, and 71 as white-collar. They were classified according to their job definitions. There were 13 subjects who were elementary school graduates. Of these, 7

completed secondary school, 98 high school, 29 college, 70 were bachelor's degree and 11 had master's degrees. While 61% of system members had higher education (faculty, master, or doctorate degree), only 34% of efficacy members, and 4% of task members did. The average employment duration at the organizations are 9.6 years (range = 0.1-29).

We did not get the subjects' names and told each that his/her responses would be anonymous. All subjects were easily integrated into the story of the switch dilemma and responded enthusiastically. They continued to discuss the story after their interviews. An important issue that complicates the analysis of the interviews originated from the respondents: some subjects were cutting their answers short. In this case, interviewers were advised to encourage the respondents to speak more about their reasons and behavior, as follows. (1) If the subject decides to turn off the switch, he or she should be reminded of the penalty. If the subject decides not to turn off the switch, he or she should be reminded of ongoing loss and should also be asked, "Did you make this choice because of the punishment?" (2) If a subject says that he or she will compare the benefits and costs, and then choose the best option, then ask, "Are disregarding the punishment?"

## 6.2 Analysis

**Measure Validity and Reliability:** The measures were subjected to an inspection to assess their reliability and validity. The Cronbach's Alpha value found as ,670. An exploratory factor analysis was performed including 17 items by using principal component with varimax rotation and an eigenvalue of '1'. The Kaiser-Meyer-Olkin measure of sampling adequacy was ,737 and the Bartlett's test of sphericity was significant at  $p < .000$  / Approx. Chi-Square = 578,359. Six components have eigenvalues over Kaiser's criterion of 1 and explained 58,66% of the variance. Factor loadings of 17 statements after rotation seen in table 4. Factor loadings are significant and acceptable according to Stevens (2002) due to sample size, still they would be stronger. However, newly born HOCS encountered three problems in this process. First, segmentation of the statements of factor analysis partially agreed with the theoretic segmentation. Second, 3 of 17 factor loads could be supposed as transitional between components, more accuracy needed. Third, according to discriminant analysis, HOCS could separate task and efficacy members distinctly but the separation of efficacy and system members are not in the same class.

**Results:** New components conceptualized as in the table 4, according to the common grounds of statements in terms of the viewpoints of respondents. Anticipated components was different as following: Spatial Subscale: rM1, rM2, M3, M4. Temporal Subscale (despite it has 1 statement): rZ1. Complexity Subscale: rK1, rK2, rK4, KSTS1, rKSTS2. Design Subscale: TAS1, TAS3. Local versus Global Subscale: rG1, G2. Deep versus Surface Thinking Subscale: rYZ1, rYZ2, YZ4. In this manner, without constructing a new theoretic structure and still referring to the preliminary one, our new assumptions that constitute HOC components arise as following.

**F1:** Contribution oriented members which have high OC are cognitively motivated through their organizations for making contributions and they face with reality from a positive stance. Following concepts are in association with our definition: The 'positive orientation' concept which Alessandri et al. (2014) indicate that it has been identified in past studies as a factor including, self-esteem, life satisfaction and optimism, is also expected to act as the key resource in sustaining individual engagement at work by Hobfoll (1989). Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003) would have considered for this subscale and also heedfulness concept of Weick & Roberst (1993, p. 361) **F2:** Task focusing behaviour is overlapping with low level spatial perception. Some members which have low OC strongly focus on their tasks, some others not. **F3:** From the perspective of 'superficial effort appreciation', some members which have low OC appreciate others efforts superficially without evaluating their deeper effects, some members evaluate profoundly. **F4:** Escape to determinism: The common ground of statements 'rZ1' and 'rG1' seem as 'uncertainty' notion, which the future related and general issues creates it similarly. Hodson & Sorrentino (1999) state that, uncertainty-oriented individuals have distinctly discovery-oriented (presumably task exceeding) cognitive styles and certainty-oriented individuals are interested in maintaining clarity of what is already known. We allready shared the observations of Maslow about the relation between the intellectual capacity and unknown, under the title of 'Fear and Enthusiasm'.

Table 4. Rotated factor loadings

SUBSCALES	ITEMS	F1	F2	F3	F4	F5	F6
<b>F1. POSITIVE CONTRIBUTIONS</b>							
I take decisions by considering, how I might affect other jobs in the workplace.	M3	.72	.14	.06	-.11	.00	-.07
I think small changes can produce important results.	KSTS1	.66	.13	-.14	-.16	-.02	.05
Despite a system perform smoothly, I re-design it in different ways in my mind.	TAS1	.71	-.08	-.13	.06	.15	-.04
'I predict the results of an occured error, at the far side of the enterprise.'	M4	.56	-.09	.02	.29	-.30	.17
<b>F2. TASK FOCUSING</b>							
I focus on my own job and don't deal with other jobs executed in workplace, much.	rM1	.01	.75	.02	.21	.20	.09
I don't spend time in learning things that I won't need in my work.	rYZ2	.08	.71	.00	.05	.00	.00
The executer is the person who is most responsible for the fault.	rK2	.14	.50	.41	.08	-.05	.026
<b>F3. SUPERFICIAL EFFORT APPRECIATION</b>							
I think the harder people work the better the outcomes will be.	rKSTS2	-.16	-.06	.76	-.05	.15	.19
The processes that running without failures, depends on each employees equal effort.	rK4	-.06	-.01	.57	.26	.21	.23
I learned that, the way to do my job fast and accurate is to memorize the work process.	rYZ1	-.06	.27	.65	.00	-.11	-.16
<b>F4. ESCAPE TO DETERMINISM</b>							
I take decisions for the outcomes which could occur recently, rather than could occur in the future.	rZ1	-.06	.13	.03	.72	.07	.00
I prefer to deal with specific problems rather than with general questions.	rG1	-.01	.18	.06	.77	.07	.00
<b>F5. INTERVENTION TO WORKPLACE</b>							
Employees must not express opinions about the work which they are not experts.	rK1	.04	.10	.15	.06	.82	-.05
I am solely interested in the part of the work which I am responsible.	rM2	.12	.52	.09	.27	.52	-.08
I like to re-designe work-processes in novel forms, in my work place.	TAS3	.47	-.03	-.13	.11	.49	.28
<b>F6. ORGANIZATION ORIENTED CURIOSITY</b>							
I care more about the general effect than about the details of a task I have to do.	G2	.03	.05	-.05	.03	-.04	.88
I find that many subjects about my job can be very interesting, once you get into them.	YZ4	.52	.06	-.04	-.08	.03	.43
Eigenvalues		2,825	2,679	1,262	1,147	1,039	1,021
% of Variance Explained		16,616	15,757	7,425	6,749	6,112	6,007

Table 5. Means and standard deviations for factors &amp; stages

		M	SD
<b>F1</b>		3,95	1,02
	task	3,66	1,16
	efficacy	3,88	1
<b>F2</b>	system	4,4	0,74
		3,24	1,34
	task	2,16	1,21
<b>F3</b>	efficacy	3,33	1,24
	system	3,92	1,12
		2,46	1,21
<b>F4</b>	task	1,99	1,07
	efficacy	2,44	1,17
	system	2,92	1,28
<b>F5</b>		3,06	1,21
	task	2,51	1,17
	efficacy	3,09	1,18
<b>F6</b>	system	3,44	1,16
		3,2	0,96
	task	2,22	1,1
<b>F5</b>	efficacy	3,24	1,2
	system	3,94	1,13
		3,83	1,01
<b>F6</b>	task	3,57	1,12
	efficacy	3,82	0,96
	system	4,07	0,99

**F5:** We could propound an intervention inclination notion referring to related statements. ‘TAS3’ is separating from ‘TAS1’ in this respect. While ‘TAS1’ positively re-creating ‘any’ system, ‘TAS3’ intervene positively to ‘his’ workplace. Some positive orientations would occur by not intervening to the environment. So intervention dimension would arise as a catalyst of positive orientation inclination. **F6:** Organization Oriented Curiosity: These two statements un-intentionally seem to measure the organization related curiosity of respondents. We shifted ‘YZ4’ from F1 to F6 for forming a component, in favor of not losing a statement which increasing the scaling quality of discrimination process. Already it was not far from being there. These subscale assumptions should be tested to be clarified or re-arranged by more set of statements.

Table 6. Inter-Correlations between factors

	F1	F2	F3	F4	F5	F6
F1	1					
F2	0,08	1				
F3	0,19	0,05	1			
F4	-0,39	-0,04	-0,24	1		
F5	0,27	-0,19	0,19	-0,18	1	
F6	-0,13	-0,50	0,05	0,09	0,29	1

Note. Extraction method: Maximum likelihood. Rotation method: Oblimin with kaiser normalization.

Scores on the six subscales, and their distribution among stages are presented in Table 5. Average scores of task members on HOCS is ‘2,70’, for efficacy members it is ‘3,32’ and for system members it is ‘3,82’. The significance of increasing scores between stages have discussed by discriminant analysis.

The correlations between the factors are contained in table 6. Several of these intercorrelations are seen around 0,2 and others below. This would mean that, factors are measuring the same thing referring to coherently differentiating mean values of every statement between KOC stages (Table 5), while they are approaching OC from distinct dimensions referring to their low correlation (Table 6).

Table 7. Tests of equality of group means

Variable	Wilks' Lambda	F	Sig.
rM1	0,747	35,745	0,000
rz1	0,961	4,338	0,014
rk1	0,815	23,876	0,000
rm2	0,753	34,691	0,000
rg1	0,898	11,956	0,000
m3	0,925	8,561	0,000
ksts1	0,93	7,956	0,000
tas1	0,92	9,174	0,000
rksts2	0,959	4,519	0,012
m4	0,975	2,75	0,066
ryz2	0,853	18,242	0,000
rk4	0,871	15,615	0,000
tas3	0,896	12,24	0,000
g2	0,981	2,093	0,126
ryz1	0,96	4,423	0,013
rk2	0,843	19,671	0,000
yz4	0,966	3,719	0,026

Discriminant Analysis: Wilk's Lambda in the Table 7, identifying the most discriminant variable. The lower the result, the higher is the discriminant strength of the statement (Ganga et al., 2012, p. 2373). Table 7 show that the variable with the highest discriminant strength is 'rM1' which has a value of 0,747.

Table 8. Test results

Box's M		463,508
F	Approx.	1,135
	df1	306
	df2	39867,706
	Sig.	<b>0,053</b>

Box's M (Table 8), tests the null hypothesis for discriminant analysis, if the covariance matrices don't differ between groups formed by the dependent (Hair et. al., 2009). The researcher wants this test not to be significant so that the null hypothesis that the groups don't differ can be retained (Burns & Burns, 2008, p. 598). In this case the Box's M is 463,508 with F = 1.135 which is supporting the requisite mentioned above at (p = 0,053 > .050). Burns also noticed that (2008, p. 598) with large samples, a significant result is not regarded as too important.

The canonical correlation in the Table 9 is the multiple correlation between the predictors and the discriminant function (Burns & Burns, 2008, p. 598) which could square to use as an effect size (Field, 2009, p. 618).

Table 9. Eigenvalues

Function	Eigen-value	% Variance	Cumul.%	Canonical Correlation
1	<b>1,849</b>	95,5	95,5	<b>0,806</b>
2	<b>0,087</b>	4,5	100	<b>0,283</b>

Wilk's lambda indicates the significance of discriminant functions (1 through 2) and the significance after the first variate has been removed (2) (Field, 2009, p. 619). When we both tested the variates in combination Wilk's lambda has the value (0.323), degrees of freedom (34) and significance value (.00). Two variates significantly discriminate the groups in combination (p = .00), but the second variate alone is non-significant (p = .392). Table 10 also provides the proportion of total variability not explained (Burns & Burns, 2008, p. 599). For the function '1 through 2', 32,3% of the variance is not explained.

Table 10. Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1 through 2	<b>0,323</b>	229,418	34	<b>0,000</b>
2	<b>0,920</b>	16,896	16	<b>0,392</b>

According to structure matrix (Table 11-some of the statements included), 'M3, KSTS1, TAS1 and M4' statements have relatively succeed to separate system members from efficacy members. And according to group mean data, system members reacted positively to these statements.

Table 11. Means and structure matrix

	Group Means			Function	
	Task	Efficacy	System	1	2
rK1	1,78	2,86	3,82	,350*	,064
rK4	1,51	2,15	2,78	,282*	,096
TAS3	3,19	3,72	4,21	,250*	,066
<b>KSTS1</b>	3,97	4,02	4,61	,161	<b>,562*</b>
<b>M3</b>	3,63	3,93	4,55	,198	<b>,320*</b>
<b>TAS1</b>	3,41	3,76	4,31	,210	<b>,256*</b>
<b>M4</b>	3,63	3,81	4,1	,115	<b>,137*</b>

Note. \*. Largest absolute correlation between each variable and any discriminant function.

They are the 4 of the 6 straight (not-reverse) statements of 17 statements in HOCS. Maybe the scarcity of positive statements and their derived forms in the questionnaire effected negatively the discriminant success of HOCS for separating 3<sup>rd</sup> and 4<sup>th</sup> group members. Further researchs could focus on this point.

Classification Table: The cross validated set of data is a more honest presentation of the power of the discriminant function than that provided by the original classifications and often produces a poorer outcome (Burns & Burns, 2008, p. 602). The classification results reveal that 77.6% of the respondents were classified correctly into three groups (Table 12). This is the overall predictive accuracy of the discriminant functions (Burns & Burns, 2008, p. 602). According to cross validation, efficacy stage members were classified with better accuracy than were task stage members. About 73% of the task group and 85% of the efficacy group were classified correctly, as they were classified by a subjective scale. Of the system stage members, 61.7% were classified as they were before.

### 6.3 Criticizing the HOCS

The discrimination rate of 77.6% would be enough to confirm the success of the subjective classification and some of the theoretical assumptions of this article. This confirmation was our preferential target. However, the HOCS has problems being a strong scale unless it has strong factor loads and has solved the inadequate discrimination performance of system members and efficacy members. In addition, its inner subscale specificity should be constituted, and the stability of these subscales should be tested.

Table 12. Classification results

	Original	Stages		Predicted Group Membership			Tot.
				2	3	4	
		2	3	6	0	41	
% Freq		3	5	112	9	126	
		4	0	15	32	47	
		2	85,4	14,6	0	100	
Cross-validated	Freq	3	4,0	88,9	7,1	100	
		4	0	31,9	68,1	100	
		2	30	11	0	41	
		3	8	107	11	126	

	<b>4</b>	0	18	29	47
	<b>2</b>	<b>73,2</b>	26,8	0	100
%	<b>3</b>	6,3	<b>84,9</b>	8,7	100
	<b>4</b>	0	38,3	<b>61,7</b>	100

Note. 83,6% of the originally grouped cases were correctly classified. 77,6% of the cross-validated grouped cases were correctly classified.

The area of a circle increases exponentially in relation to the increase of its radius. Correlatively, whenever an individual reaches to the 3rd KOC stage, the technical and sociological images that he is aware of begin to increase exponentially. This multiplicative coefficient creates a kind of twilight border separating a 3rd stage member from a 4th stage member. That is why the lower limit (border of the task area) is taken into account when identifying efficacy stage members and emphasized when such members create justifications for overstepping their jurisdictions. According to this, the relative failure of the HOCS while segmenting the 3rd stage from the 4th originates from the exponential growth of organizational knowledge that occurs while members shift to upper stages. Actually, there is as distinct a shift between the justifications of 3rd and 4th stage subjects as there is between 2nd and 3rd, according to subjective analysis. It might be said that, due to the exponential growth of the complexity in the environment, 4th stage members scored relatively low points on the HOCS. In other words, a greater cognitive shift should occur when moving from the 3rd to the 4th group according to the move from 2nd to 3rd, to successfully discriminate between stages.

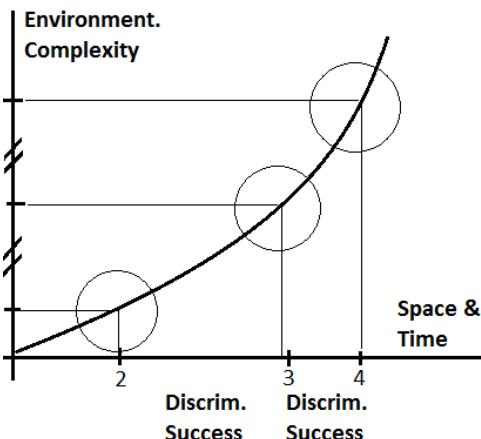


Figure 4. Decreasing of discriminant success

The standard deviations of the members of different groups barely change (1.14 for the 2nd; 1.13 for the 3rd; and 1.05 for the 4th). This would simply mean that the inner variability of stage members stays stable in terms of the HOCS while the members' cognitive capacities are rising. This would be considered positive data for the HOCS.

#### 6.4 Additional Analysis

We conducted regression analysis wherein "education level" "employment duration" and "networking level" were the independent variables and the objectively defined HOCS is dependent. We asked each subject, "On average, with how many friends do you communicate in one day just to execute your work, not for chatting." The range of responses varied, ranging from 2-300, and we called this data the "networking level". This data does not represent network position, betweenness, centrality, etc. The relation between networking level and the HOCS was completely meaningless. We also observed this relation between subjects of equal education levels. Again, the relation was completely meaningless. This relation also bordered task and efficacy stage members due to the success of the HOCS on them. The result was similar. We suggest that the thing we measured as the HOCS level does not appear even partially as a function of the networking level of the members. The relation between employment duration and HOCS was barely meaningful but too weak.

On the other hand, referring to the F value and its significance in Table 13, there is a meaningful relation. Referring to the R2 value, there is a considerable positive relation between education level and HOCS. This correlation rate (0.21) stands under the rate of correlation between the adult moral maturity score and educational

level (0.53 to 0.69), which Trevino (1986, p. 607) reported. We also tested the attendants' moral maturity scores by using the "Heinz Dilemma" in the pilot study. All attendants were residing in the 3rd or 4th moral stages, naturally. However, we came across several task stage members among the "interpersonal concordance orientation" members. This information gives us clues that our derived approach achieved identifying a brand new environment at the organization level. We also expect a high correlation between HOCS and "job rotation", which we could not test under the scope of this study.

Table 13. HOCS and education leve

Dependent Variable	Predictor	b	t	sig	R2	F	sig. F
<b>HOCS</b>	<b>Education Level</b>	0.46	7.835	0.000	0.21	61.385	0.000

## 7. Conclusion

In this study, we showed how an ontological cognitive pattern would project on different aspects of human kinesis, such as organizational formations. This cognitive pattern reveals a kind of hierarchy between organization members that is grounded in their environmental perception capacity as well as other features. This study is basically a typological work. We tried to characterize the features of the mentioned stages in terms of emotional and behavioral issues. Based on these definitions, managers would have the ability to regulate their supervision of organization members according to the stages to which they belong.

Human resource managers would use these findings and scales to evaluate candidates. It is not appropriate to idealize any stage; instead, it would be proper to discuss how we could place different role members, bound to their robust cognitive capacities, to maximize their performance. Managers would make regulations on the compulsiveness of task definitions in accordance with the features of different stages. These discussions reveal how clear and specific job definitions could change internal fears to external ones and, as a result, diminish employee performance for any stage member, except task stage members. It seems that applying strong supervision is meaningless and would be detrimental to 4th stage members, would only be meaningful in unexpected situations for 3rd stage members, and would be continually meaningful for task stage members. KOC stages may also represent the dispositional basis of the members' achievements at work under specific organizational circumstances.

As Kaplan and Henderson (2005, p. 517) stated: "The effects of an incentive regime cannot be cleanly separated from cognition. Rather, cognition and incentives evolve simultaneously in a complex, reciprocal process." The discourse they have used, "I act like this because this is in my best interests," identifies task stage members, and the discourse, "I act like this because this is in my company's best interest," identifies 3rd and 4th stage members. We believe that the area needed by 3rd and 4th members in order for them to feel responsible will separate them via affecting their degree of motivation.

We implicitly discussed our personally identified motivation approach in the "Inertia and Enthusiasm section." The fears introduced individually for each stage in the table portion of Figure 2 specify the suitable incentives for each type of employee in an organization. These incentives are action based, as Kaplan and Henderson (2005) suggested; organizational competencies or routines are as much about building knowledge of "what should be rewarded" as they are about "what should be done." In response to this, we can say that a manager should motivate a 4th stage member by giving him chances to provoke or manage the integrative flow of actions between the overall system and its sections, and the same manager should approach a 3rd stage member in a way that allows him to go beyond his jurisdiction step by step with close supervision.

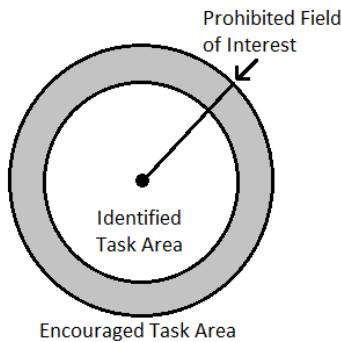


Figure 5. Encouraged task area and prohibited field of interest

In detail, we argued that it would overcome organizational inertia if managers were to identify multiple-stage jurisdictions for their employees, under the assumption that the cognitive borders of each employee (except task stage members) exceeds the cognitive necessities of his or her “identified task area.” On the other hand, we could suggest that exceeding cognitive capacity generally cannot fulfill the needs of the environment due to the lack of related experiences and the gap between perceiving something and understanding it deeply. Our findings promoted this assumption.

Some employees have an innate tendency to interfere in achievable but non-identified work, and some do not. The ranking of each employee according to his or her cognitive capacities regardless of their hierarchic levels in the organization and assigning them “encouraged task exceeding levels” would institutionalize the usage of organizational potential. Under this concept, the “identified task area” expresses the formal tasks that are assigned to each employee, “encouraged task area” expresses the encouraged and allowed jurisdiction of each employee that exceeds his or her distinctly identified tasks, and “prohibited field of interest” expresses the area where an entrepreneurial employee would interfere naturally but is repressed formally. Actually, with this conceptualization we propose to institutionalize the natural and necessary overflows in organizations slightly.

Any identification means the reduction of absolute reality. In response to this, managers would lead their organization members into controlled chaos to benefit from their enthusiasm. By controlling them, they could partially prevent the system from the detriments of overflowing actions. An evaluator would propose methods to realize this intermediate zone of initiative. Such an attempt is suitable as the subject of another study.

This study also specified how individuals would use the ingredients of their environments while making decisions using the approaches of different decision-making theories. In this manner, some decision-making theories would be re-read with guidance from our study. For example, as mentioned before, (Hinson et al., 2003) according to “Hyperbolic Discounting Theory,” the value of a reward declines over time; however, higher KOC stage members would compensate for the decline relatively better. We also suspect that the “certainty effect” (Tversky & Kahneman, 1986) and the “ambiguity effect” (Ellsberg, 1961) would have a greater effect on decision makers below the system stage.

OC capacity could be approached as a determinant of the “prospective behavior” notion in the Reasoned Action Theory of Ajzen and Fishbein (1980), while organization members (except the 1st and 6th stages) try to preserve their links with their organizations. In this theory, attitudes are determined by one’s beliefs that performing the behavior will lead to certain positive or negative consequences (outcome expectancies) (Bleakley & Hennessy, 2012, p. 29). In other words, attitudes-at the same time-are formed as reactions to the essence of outcomes from planned behavior. The essence of the outcomes depends on the perception capacity of the individual. Therefore, the individuals’ environmental perception capacity will determine the reduction degree of the possible results when an action is executed. This means that the determination of an individual’s OC capacity will improve behavioral prediction.

## 8. Limitations and Future Directions

We examined the established groups structured by task identifications and focused on a clearly identified environment by creating it with a dilemma that also suited the nature of the subject’s work environment. Therefore, it is beyond this paper’s scope to explain how these cognitive stages would occur in informal groups,

which have more unspecific and dynamic environments. We also identified the specific dimensions of stages in response to a specific dilemma. Other types of dilemmas need to be studied to identify some other aspects of the different stages, as we discussed in the “Fear and Enthusiasm” section. Future research could present how these stages appear in different decision domains and how they would manifest in relation to different aspects of group members, like group adaptability, job satisfaction, individual performance, leadership behavior, and many others. Gender difference also not addressed in this study due to inadequate female participation.

It is not entirely possible to methodize the subjective identification process of the respondents' answers to a dilemma. For some cases, it is difficult to explain why we assigned the subject to a specific stage. This is a fact of Kohlbergian analysis, and we developed HOCS to demonstrate that the process works with this partial ambiguity. We developed HOCS using an inductive approach instead of a deductive one, although we tested it repeatedly on a series of subjects. From this point forward, a deductive approach should be applied to develop a more accurate, inclusive, and strong HOCS, based on the theory and data of this study. We should confirm that test and retest validity have not been applied for HOCS. This is a shortcoming but is not effecting the verification success of HOCS. On the other hand, the convergence validity of the scale is provided by the subjective analysis, which creates clusters to compare.

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### Note

"In Europe, a woman was near death from cancer. There was one drug the doctors thought might save her. A druggist in the same town had discovered it, but he was charging ten times what the drug cost him to make. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together half of what it cost. The druggist refused to sell it cheaper or let Heinz pay later. So Heinz got desperate and broke into the man's store to steal the drug for his wife. Should Heinz have done that? Why or why not?" (Gibbs et al., 2007, p. 449).

### Appendix

The 50 of the 550 interviews (228 main + 322 pilot) have printed here due to the limited space. Every interview has a code (The letter indicates the interviewer and the digit indicates interviewers survey ranking), assigned KOC stage in parenthesis, job definition, subjects answer printout and interpretation of the interview.

E26: (3) Top Execute: Technical Deputy of General Manager, retired and helping out as consultant. Interview: S: I mean what kind of benefit could be gained from that defective goods? I would turn off the switch because it benefits no one. I: And what is your opinion about the penalty? S: I would do everything within my powers for that rule maker to be expelled. (Laughs) Something like this cannot happen. Production will be defective and I will not switch it off. I: Machines are connected to each other. S: You did not say that the machines are connected. (Interviewer forgot to mention this in first reading) But flowing products could ruin the next machine so the switch should be off if so. Interpret: Subject is a typical 3. He connects benefit of the company directly to stopping the system that manufactures defective goods. He automatically considers the penalty meaningless because it is opposite to his judgment.

E28: (2) Material Controller. Interview: S: If there is no one around I would turn the switch off. In order to prevent further costs. I: And what about the penalty given before, what do you think about it? S: (Long lasting indecision) If there was a penalty given I would pretend like I did not see it and walk away. Interpret: Subject gives a typical 3 answer. But when he is reminded of the penalty he turns into a typical 2. His long lasting indecision is because of the penalty.

E29: (2) Grinding Operator and Assembly. Interview: S: Of course I would not turn it off. Because I do not know or it is not my responsibility. Interpret: Subject attributes his behavior to not knowing. He is a 2 that shows inertia.

E31: (3) Accounting Manager. Interview: S: I would turn the switch off. In order to stop defective goods flow. I: And what do you think of the penalty and the rule? S: It is not a standing rule for me. I would not stick at it. Interpret: Subject appears to mention that rules are conditional. However, the absence of cost comparison, lack of showing indecisive behavior and anarchical attitude against the rule makes him a 3.

E32: (3) Process Quality Control Officer Interview: S: I would turn it off. My cause is the cost. Plus my responsibility. I have responsibilities to my company. I: What do you think about the rule? S: Frankly, I obey the rules I think logical. I don't obey the rules I think illogical. Interpret: Subject bisects rules as rational and irrational. However he does not present an opinion or image to disprove the rules he entitles as irrational with a superior evaluation. Subject is a typical 3. He thinks he must be useful. Cognitive energy he would use for this expends from his job description but can not reach level 4.

B1: (3) Mold Design - Process Design Interview: S: I would turn it off. I: Well, there is a penalty, what do you think about it? S: What could be the biggest penalty? If it is termination then I am out. Interpret: Subject is a typical 3.

B2: (2) Packaging Interview: S: I would not turn it off. I would inform someone. I: But there are no officers around. S: You are gonna inform, otherwise... I could not solve the situation so I would not turn it off. Interpret: Subject showed minimum intellectual effort. He declared he cannot solve the situation and did not show initiative that typical 3's show. He is a typical 2.

B3: (3) Assembly and Packaging Interview: S: I would turn it off. I: Than you would take the penalty risk. S: Yes, because I do not want products to be that defective. Interpret: Subject did not make a broad statement. Still his statement shows he is more a 3 than a 2.

C1: (3) Foreman - Press Interview: S: It is a crime if I don't. If I stop there will be a punishment. I: What would you do? C: I would turn it off. Because there is waste. I: What do you think of the penalty? S: It is just a penalty after all. Boss will make a larger loss. Interpret: Subject is a typical 3. He exceeds his job definition in order to be useful but he does not show necessary value to the rules.

E37: (4) Human Resources Administrator Interview: S: I will

contact relevant person directly. I: So you would not turn it off? S: I would not. If something like this happened before ... I: What if you cannot reach him, and this will take a while? S: As I said before, I will wait until I reach. I: And what is your reason to wait exactly? Is it you are afraid of the penalty or something else? S: There must be a reason behind that decision. They must have known something. Interpret: Subject attributes a meaning to rule regarding an experience. He does not accept the rule superficially, he assumes that the rule has a meaningful reason and obeys the rule. We think he did not make a cost comparison because he assumes rules already makes this comparison. E40: (4) Quality and Process Technician Interview: S: (Indecisive) if it is something I do not know I would not turn it off but if I am competent at it, I would. I: Let's assume you are not competent. S: Than I would not. I: Could you explain your reason? S: When I turn it off it could create another problem somewhere else. If that new condition creates a worse negativity I would not turn it off. But if could calculate the possibilities, than I would. Interpret: We can say the subject is a clear 4. He both mentioned possibilities and attributes a meaning to the rule. He expressed these while he is aware of his acts could create reactions. E42: (3) IT, System Support Officer Interview: S: I would take initiative and turn it off. Because I would not think of the rule in that situation, I would consider companies loss. Because I know that and I will suffer a twinge of conscience later. So I would stop it. Because I can explain this. If there will be a penalty I will obey that too. I would not think I did a bad thing. Interpret: Subject is a typical 3. He wants to help the company but he does not create a comprehensive analyze and thought pattern. He consents to the penalty but not questioning its existence. E44: (4) Mechanical Engineer Interview: S: Silence ... I am thinking about what you are doing here exactly ... I: You speak with your guts. I will explain it to you later. S: Sytems... You can't turn the switch off on instance. There is a procedure. For example we even have one for going to switch room. Therefore, this would be done by electricians. Whatever it is... In the end it should be stopped in a systematic way. Operators, technicians, whoever is responsible. If something wrong with him there is sure a substitute for him. He has to do that. I: So you say you would not hurry. S: I would not. It could create worse problems. While trying to rule out manufacturing costs I could create something worse such as a fire ...etc. Interpret: Subject assumes the switch in question is up to regulations strictly and he has knowledge about the reasons of this strict regulations. Subject is a 4. E45: (3) Foreman: Plate Lining Interview: S: I would turn it off. I: Why? S: It harms the factory. I: And what do you think about the penalty? S: What is the penalty? I: We are not sure yet. S: If it is termination I would not. I: No, not that much. S: Huh, if it is forfeiture of one or two daily wage I would. Interpret: Subject is clearly 3. We cannot say he is penalty oriented. Because he uses penalty situation in an "if" sentence. E47: (3) Technical Draftsman / Responsable from machines to be set up Interview: S: Honestly, I would not turn it off because someone who is master of his domain should check it. I would immediately call that friend. I: You can call but he cannot come till 20-30 minutes. S: So I would call and talk. I would ask. I: Ok, let's assume you could not reach him. Life is life. S: Than I would turn it off. Then I will explain it like this. I had to shut it down because products was defective. I: What do you think about the penalty? S: I would demand no penalty because the action was for company interest. Interpret: Subject is a typical 3. E49: (4) IT (Computer Systems Support Expert) Interview: S: What is my position in this story? I: Your current job. S: IT personnel? I: Yeah, but you witness this while you are passing by. S: And I have the initiative? I: Rules says you should not. You are not the responsible electric technician. S: I would not turn it off, because it is not my area. I: Is it because it is out of your jurisdiction? S: Well, me, personally, responsible person is factory director or the operating manager. I would share the situation with them and only after their approval I would intervene. I: You can't reach anybody. S: You should obey the rules. My personal opinion is if there is a rule, it could cause something that I do not know. I: Can we say it is because you are scared of the penalty? S: Penalty? No... I could take initiative. Absolutely not the penalty. It is because when I stop it I could cause something I don't know. I could harm more trying to stop loss. Interpret: Subject is a 4 but not a strong one. A pre-system member. E50: (4) Computer Systems Expert Interview: S: I would turn the switch off. I: Why? S: Although I have no field experience, but... Before I do I would call the responsible person and tell him there is a problem like this. I: I would definitely not. Call the responsible person, if he is not available I would call some other authority. Because it is not my field. I could cause some other harm ... I: Is it because of the penalty? Or... S: The rule. Because it is not my area of expertise. I: Hmm, you want to be useful for the company though? S: I do but, I don't want digress standards. Maybe when I turn that switch off it will stop the other production lines. Therefore I would find the responsible person. I would not intervene. I would report it. (Based on the rules) It is out my hands than. I: I could not get the exact reason. S: Now, I am an IT guy, I do not know manufacturing much. There are fine details. I now stopping and restarting a machine can take up to 12 hours. Therefore stopping manufacturing can cause more harm. Interpret: Subject is a 4 even if he is not a strong one. AL2: (4) Raw Material Procurement Engineer Interview: S: I would reach the electric technician directly. If he cannot come down, I would send a briefing e-mail, if there is no response I would turn the switch off. I: So you would wait for the response? S: Of course, of course. Turning the

switch may harm other processes. Therefore, if I cannot reach the person in charge, I would intervene in an informed way. I would not intervene personally. Interpret: Subject started like a 3 and finished as a 4. Subjects sometimes thinks while speaking and reaches detailed answers this way. Subject is a 4. He does not intervene because of the process he does not have a grasp on subject, not because it is not out of his jurisdiction. AL7: (3) Company Expert / Determines the causes of the faults in products that reaches consumers Interview: S: If I can reach in a short time I would, if I can't I would take the risk and turn the switch off. Interpret: Subject is a typical 3. AL11: (3) Particle board Operation Chief Interview: S: I would turn it off. I: Why? S: It damages. It harms the system. Having defective products constantly is not a good thing. Therefore I would turn it off in order to eliminate harming conditions. Interpret: Subject is a typical 3. AL18: (4) Particle board Press Operator Interview: S: Well, if I say I would turn it off, no... What if I harm the machines... Hmm, I would turn it off and face the penalty. Interpret: Questioning is inadequate but there are hints. Subject is aware of the opposite situation against the attempt of being useful. After that his answer was not questioned by interviewer. M13: (2) Accountant Interview: S: I would not turn it off, I would not understand if the products are defective, I would not know where the switch is, I would not turn it off even if I do. Because it is forbidden. Interpret: Subject is a typical 2. M15: (3) Security Guard Interview: S: I would turn it off. There would not be a physical harm but in order to stop financial lost. I also believe personal damage can be faced in order to prevent larger costs. Interpret: Subject is a typical 3. Wants to stop the damage but he can not mention this could cause a bigger harm. M17: (2) IT intern Interview: S: I would not turn it off. Because it is not my duty. I would try to find someone in charge. Interpret: Subject is a typical 2. M21: (3) Automation Maintenance Technician. Interview: S: I will try to reach the person in charge. If I can't reach him I would turn it off. I: Why? S: To prevent company from loss. Interpret: Subject is a typical 3. M22: (2) Flecker Operator/Particle board Thinning Interview: S: I would not turn it off. Call my supervisors. I would tell it to shift superintendents. They could intervene better. Interpret: Subject is a typical 2. He thinks he should intervene but thinks he could not do this himself (he could not evaluate the process after the action of turning the switch off or not) and says shift superintendent could do a better job. M23: (3) Agglomeration Operator / Calculates glue amount and adherence surface of pressed matt Interview: S: I would turn it off. The reason is this. Everyone is responsible from himself. If there is a problem and if found it out, I would intervene such as I know. After that I would let regional supervisor know. If there is going to be a penalty because of my intervention, let it be then. I should be sure of myself, feel at ease and proud. Interpret: Subject is a typical 3. M24: (2) Drying Technician (Responsable from Drying Machines) Interview: S: I would not turn it off. I would never go out my jurisdiction. Interpret: Subject is a typical 2. E63: (2) Beetroot Discharge Operator Interview: S: I Would not then. Because, you are telling it before hand. You are getting a penalty because of doing something out of your jurisdiction. I would not because I would think of my future at least. But there is public property on the other hand. I: Could be private sector as well. S: They would kick you out if you don't in private sector. I: But there is a penalty in private sector too. S: Then nobody would. I: But defective goods are coming. If this affects the goods more on time, you could take the risk after considering the costs. Interpret: Subject is a pre-task member. E64: (4) Agricultural Machinery Expert Interview: S: I would not turn it off. Everyone has his duties. Leave electricians job to electricians. Maybe it will cause something else. I: like what? S: Stopping for example, when you cut electricity of somewhere you can cut some other places electricity too. It may freeze entirely. You could stop entire operation n order to prevent 4 defective goods. Cutting the energy could harm another unit. I: Products are coming defective? S: That is for an hour or two. When you alert authorities they could fix it. Interpret: Subject is a pre-system member. MU2: (2) Electricity Metering Operator Interview: S: I would not turn it off. They could put the blame on me. Also it is forbidden. I: But manufacturing is defective. S: It is not my money. The loss is not mine. It is factories loss and it is their rule. Interpret: Subject is a typical 2. (However we should not forget that subject is an intern.) MU12: (3) Centrifuge Expert's Assistant Interview: S: If I see a huge harm I would turn it off. I would not think of the penalty. I would not wait for the electrician. Interpret: Subject is a 3. H2: (2) Measurement Control Division Interview: S: I would not. Because if something goes wrong, something could happen, a man working there could be shocked by electric. I: What if the harm continuous? S: I am not authorized. I can not act out of my jurisdiction. I: You are talking about penalty then? S: That too. When an authority comes and asks me why I did stop it I could not answer. Interpret: Subject is aggrandizes rules without the knowledge of the meaning behind. He is a 2. H3: (2) Stoker-Boiler Ignition Interview: S: It is not my concern in this situation. Interpret: Subject is a 2 that shows inertia. H6: (3) Assistant Chief Engineer Interview: S: Now I am not authorized to turn the switch off. I would just let the word out. I: There is no one but you in the premises at the moment and you can't reach anybody. I: If the loss grows I would turn it off. I: What about the penalty? S: It is managements call. I stopped the loss, clear conscience is important. Interpret: Subject is a 3. H7: (3) Stacking Arrangement Expert Interview: S: I would turn it off. We earn our bread and butter here. Should not harm much. I: Penalty? S: You are gonna pay the penalty and suffer the consequences. Interpret: Subject is a 3.

H12: (2) Worker-sorbet infuscate Interview: S: I would not turn it off. There are authorized personnel for this. There is shift superintendent. I: You can't reach your supervisors. S: There is no way not to be able to reach, you have to reach. I: Do not think of it as here S: Well, you can reach somehow. Interpret: Subject refuses to imagine an environment that he can't reach anybody. This much insistence shows degradation tendency of the environment in the story to his own awareness level. Subject is a 2. H17: (3) Cooker Expert. Interview: S: I would turn it off. We should not waste national capital. I would bear the penalty. I would make my necessary defense. If there is going to be a punishment, fine, let it be. Interpret: Subject is a typical 3. H19: (3) Agriculture consolation officer Interview: S: Well, now, I would probably. At that moment both production will make a loss and the machinery will be shut entirely. I: Yes but there is penalty S: But you would forget about the penalty at that moment. Thinking of your working area... Thinking of national interest... Interpret: Subject does not argue that turning the switch off would harm national benefits more. He is a typical 3. M25: (3) Measurement Control Foreman Interview: S: I would turn it off without a blink because it harms the company. Interpret: Subject is a typical 3. M27: (3) Electric Electronic Technician Interview: S: I am already the electric technician. I: For example, it is your foreman's duty, not yours. S: I would turn off. I: Penalty? S: Costly goods are coming out. Penalty is important but... There is loss. Interpret: Subject is a typical 3. M28: (3) Repairman Interview: S: If it is damaging the factory I would. If it is something I know. I: And, what do think about the penalty? S: We would bear the punishment. Interpret: Subject is a typical 3. M30: (2) Stacking Arragement Expert Interview: S: I would not. It is out of my jurisdiction. I: But costly and defective goods are still coming out? S: I would not if there is a penalty. Interpret: There is a possibility that subject is a 1, meaning penalty phase subject. He is coded as 2 within the study. M32: (3) Assistant of Chief Electrician Interview: S: You say there is a loss. Logically you would turn it off no matter what. Even if it is forbidden. Well, now it is not my duty. But if I could I would. You are doing bad for premises in order not to get a penalty. Interpret: Subject could not imagine the consequences of turning the switch off. Subject is a 3. M33: (2) Tallyman-Business in&out control Interview: S: I would not turn it off in that conditions. I: Your reason? S: There is the shift superintendent at that moment ... I: You can't reach anybody. S: I would not intervene electric stuff anyway bro. Because if something happens they would say it not his job. I: You would not... S: I would not. Probably would not intervene. I: And your reason is? S: I don't wanna say it is not my job, but this is a different question, did you prepare this in the university? Interpret: Subject is a 2. M34: (3) Assistant Foreman Interview: S: I would turn it off. If there is a loss in the production that means loss for the boss. And loss for country itself. That's what I would think of. Interpret: Subject is a typical 3. M36: (3) Operation Engineer Interview: S: I would turn the switch off. What's my reason here? Stop defective production. There is loss. I would even if it is forbidden. Interpret: Subject is a typical 3. E74: (3) Agriculture Region Head Interview: S: I would turn it off. I would turn it off immediately. Instantly. I would accept my penalty. I: Why? S: It both harms the machines and costs loss. Besides that we should think our countries benefit first. I: Let's assume you are working in private sector. S: I would turn it off anyway, it is my responsibility. I: And what do you think about the rule? Why do you think there is rule like this? S: Well, there can be really irrational rules with us. Don't do this, don't do that but if we obey all that rules business would not run. There are occupational safety rules but if do not get 15.000 tons of beetroot a day we can not get by. Interpret: Subject is a typical 3. He underestimates the rules. E90: (3) Production Planning Engineer Interview: S: I would turn it off. In order to stop loss... I, as a manager, know that causes cost, if I cannot reach that person... I: And, what do you think about the penalty? S: I think a rule such as no one else could intervene is nonsense. Why? The person does the production could be able to intervene. But the electricians are not in the premises and if we wait for them to come the loss will be much higher. Interpret: Subjects questioning of the penalty did not transfer into a system questioning. Subject is a 3.

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