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Orderness: An Extension of Decision Problem Alignment

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Orderness: An Extension of Decision Problem Alignment

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But lo! men have become the tools of their tools. -- Henry David Thoreau¹

The implicit assumption and the power of most taxonomies is that “things” can be classified as homogeneous entities (Bowker and Star 1999). In fact, the taxonomies lie at the foundations of biological study, where “different types of organisms can be related to one another in a systematic, orderly pattern ...” (Goodwin 1994), p. 107). Is there such an underlying order in decision problems? Scherpereel (2001) suggests that there may be a fundamental order in theory. Although the theory is sound, the application is difficult. Decision problems have a level of complexity that makes a homogeneous classification requisite in theory challenging and rigorous decomposition into sets of independent decision problems impossible. Instead, most decision problems are initially characterized as possessing some characteristics from each of the first, second, and third-order taxonomic classifications².

According to the taxonomy decision problems having characteristics from all three decision orders would be classified as perceived third-order problems. Strict adherence to decision order theory, mandates that pursuing third-order approaches is the only proper methodology for aligning³ these perceived third-order problems with potential solution methodologies, unless the perception can justifiably be changed.

Perception changes and the alignment of perceived third-order problems are the focus of the remainder of this paper. This paper suggests a possible “third-order” heuristic decomposition of perceived third-order decision problems. The suggested methodology recognizes that regions along a hypothetical continuum best represent a decision problem’s taxonomic classification. Thus, an “orderness” construct is used to better understand a perceived third-order problem, where “orderness” is defined as an indicator of how much the problem resembles the base class of each of the three decision orders.

The objective is to answer the question: how much of the perceived third-order problem resembles the characteristics of a homogeneous first-order, second-order, or third-order problem? If the decision problem is mostly third-order, decision order theory alignment suggests focusing on third-order approaches. If the problem has primarily second-order characteristics then second-order approaches might be pursued; similarly, if the problem is significantly first-order then some first-order approaches might be appropriate. Using this decomposition, the perceived “orderness” of the decision problem must align to the approach methodology pursued by the decision-maker. This is called a “micro level alignment.”

This paper introduces the concept of micro decision problem alignment and presents a number of possible applications. An assumption is made that the decision-maker is able to make an accurate assessment of the decision problem “orderness.” It is also assumed that a reasonable assessment of the approach methodologies is possible. Establishing validity for these assumptions will need to be quantitatively evaluated through empirical research, which is beyond the scope of the present analysis.

¹ From Walden, “Economy” (1854).

² For a complete explanation Decision Order Theory, and the first, second, and third-order taxonomy see Scherpereel (2001).

³ Scherpereel (2002) discusses the concept of alignment extensively. By definition, alignment in the decision orders context implies that the decision problem characteristics are matched to the possible solution approaches.

AN ALIGNMENT METHODOLOGY

Scherpereel (2002) introduced a decision order framework that dictated an alignment methodology. This high level presentation did not pursue the complexity introduced by non-homogeneous decision problems. To pursue this complexity, the concept of alignment will be placed in the context of current literature. Specifically, this section addresses the complexity of non-homogeneous decision problem alignment and presents a graphic visualization methodology capable of identifying both the magnitude and direction of misalignments.

Overview: What is Alignment?

Alignment is the essence of management – Fred Smith, Chairman of Federal Express⁴

From previous usage, the concept of alignment as applied to decision order theory should already be clear. The objective is to align the approaches available for a particular decision problem with the characteristics of that problem. An analogous term is found in the business literature for aligning the approaches available to a business with the characteristics of the environment in which that particular business operates. Both are concepts of alignment, the former is framed at the micro level and the latter at the macro level.

Labovitz and Rosansky (1997) apply the “macro level” alignment concept to the management and organization of companies. They define alignment “as both a noun and a verb – a state of being and a set of actions ... alignment ... refers to the integration of key systems and processes and responses to changes in the external environment” (p. 5). In an article on developing a business’s “core competencies,”⁵ Carroll and McCrackin (1998) state, “realizing the full benefit of competencies is only possible through the integrated process of aligning....” These points are supported in the book “Built to Last: Successful Habits of Visionary Companies” by Collins and Porras (1994), where empirical evidence is presented showing that the companies best able to sustain success over long periods of time are those that “aligned” their business processes and capabilities to the dynamically changing marketplace.

The usage of the macro level alignment concept has received its greatest support in the information systems literature. Since information systems are key components defining the infrastructure of an organization, assuring alignment between the information system and the business organization should be an information systems executive’s top priority. This hypothesis is supported by surveys of information systems executives who identify “aligning information systems to corporate goals ... as the number one concern over the last five years...” (Strassmann 1998), p. 1).

As stated by Lefebvre (1992), “most organizations are generally in a state of misalignment.” He goes on to observe that “misaligned organizations operate at decreased levels of performance ... the more severe the misalignment, the worse the performance (p. 52). Although Lefebvre (1992) uses the term at the macro level to discuss the specific decision problem of aligning a business’s information structure, the observation applies equally well to the micro level alignment of decision problem approaches with decision problem characteristics.

Macro or Micro Alignment

The distinction between macro and micro alignment is artificial. It is a distinction created by the framing⁶ and the decomposition of decision problems. Any decision problem can be framed at a higher macro level; however not all decision problems can be framed at a lower level. This implies that there exists a limit to the useful decomposition of any decision problem. The lowest level that a problem can be framed is defined as the micro level. Thus, a micro decision problem is simply a decomposed macro decision problem. If a macro decision problem cannot be reasonably decomposed, then it is equivalent to the micro decision problem. The macro and micro decision problems describe the same concept.

For example, macro aligning a business consists of adjusting the business’s competencies, capabilities, resources, tactics, strategies, goals, and objectives, to the requirements of the marketplace in which the business competes. This macro alignment decision is typically described using the third-order language from the decision order taxonomy (uncertain, complex, etc.). Thus, according to the decision order methodology, it should either be

⁴ This quotation is taken from the cover jacket of Labovitz and Rosansky (1997).

⁵ The concept of a business’s core competency is attributed to Prahalad and Hamel (1990).

⁶ Framing is defined as the act of constructing/defining the limits of the system to be subjected to an analysis. This is the meaning implied in this argument.

decomposed or treated as a third-order decision problem. In the former case the macro decision problem would be re-framed into a set of independent micro decision problems. In the latter case, the macro decision problem is equivalent to the micro decision problem. Assuming equivalency, aligning a business consists of adjusting the approaches the business takes to the marketplace, to the characteristics of the marketplace.

Therefore, the generic term “alignment” will be used to reference micro decision problems as well as non-decomposable macro decision problems. The implication is that it is inappropriate to apply alignment methodologies to decision problems that can be decomposed into independent parts. For example, if a hypothetical decision problem were framed as third-order but could be reasonably decomposed into two independent second-order decision problems, it would be prudent to decompose the problem prior to alignment. Maintaining a third-order conceptualization would dictate third-order approaches and approximating heuristics, when the same problem, decomposed, could be approached in parts using simpler second-order methodologies and more precise techniques.

There exists an imperative to align a business’s decision-making at both the macro and the micro levels. If a business wishes to maintain a sustainable advantage, and operate at peak performance, alignment at both the micro and macro level is required. The decision order taxonomy and methodology provide the framework needed to characterize micro and macro decision problems for alignment (Scherpereel 2001). Identifying the misalignment is the first step in achieving alignment.

Aligning a business means aligning the decisions made by that business. The decision order visualization, illustrated in the following examples, views the business as a portfolio of decision problems. The goal in these examples is not to identify misalignment for a specific micro decision problem, but rather, to identify misalignment of the portfolio. Thus, the decision problem is framed at a macro level. The inclusion of the micro level decision problems in the portfolio are dependent on the macro level selected. As a portfolio problem, the problem is non-decomposable and thus alignment is a valid objective.

Business Capability Alignment

A business can be viewed as a portfolio of resources (Penrose 1959; Winterfeldt and Edwards 1986), competencies (Prahalad and Hamel 1990), or capabilities (Richardson 1972). The precise makeup of these portfolios will differ slightly in scope. A resource portfolio will place a greater emphasis on the physical assets (size, access to capital, etc.) of the business, while a competency portfolio will emphasize the non-physical assets (skills, knowledge, etc.). Envisioning a business as a portfolio of capabilities seems to allow a broader interpretation that encompasses the core elements of the business’s resources and competencies. Therefore, visualizing the alignment of a business’s capabilities is chosen as the focus of this example. Identifying the capabilities of a business is analogous to identifying the business’s toolbox; a concept introduced in by Scherpereel (2002). As was done with decision problems, the business capability toolbox can be segmented into a mix of available first, second, and third-order capabilities, or methodologies. Since the capabilities that a business possesses determine how it is able to act and react in the marketplace, business capability alignment consists of adjusting the toolbox segmentation, or capabilities, to the required characteristics of the marketplace.

A business can possess different levels of first, second, and third-order capabilities, and the marketplace can exhibit different levels of first, second, and third-order characteristics. Thus, the two dimensional alignment of a single-order’s methodologies to a single-order’s characteristics is no longer sufficient. A multidimensional construct is required to represent alignment along all dimensions simultaneously. Figure 1 depicts the three decision orders, each as its own dimension. A scaled “level of orderness” indicates the business’s current capabilities and is represented by a circle on the axis. The same scaling is used to indicate the “orderness” required by the current market characteristics.

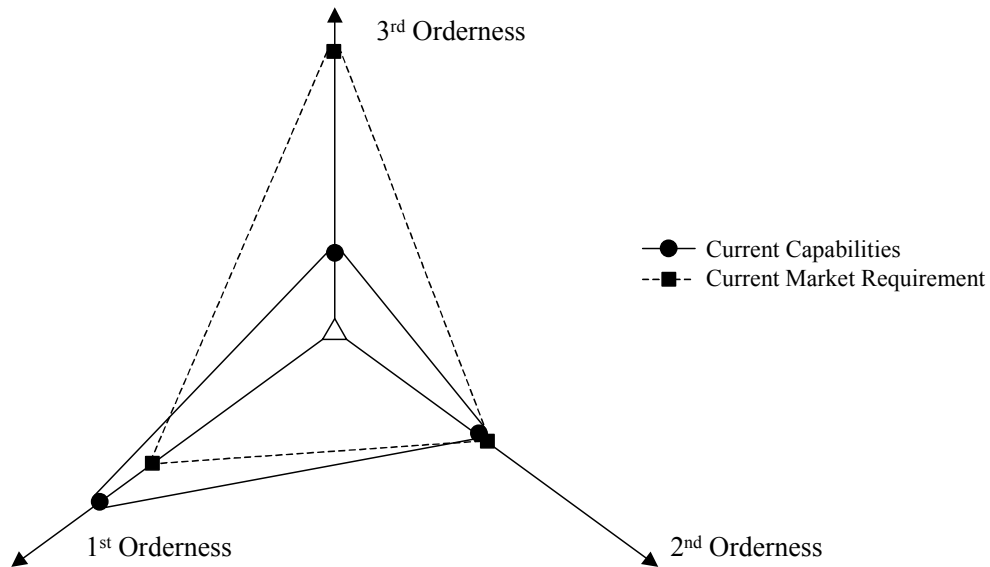


Figure 1: The Three Dimensions of Decision Order Alignment

Alignment is achieved when the “level of orderness” is the same for both the business capabilities and the marketplace requirements. Achieving alignment becomes a strategic objective for the business. As with most strategic objectives there is more than one tactic that can be used to achieve this objective. Two different tactics are proposed in this example. These two tactics are labeled “active” and “passive” response, to describe the role the business takes in adjusting their capability toolbox.

Given the alignment situation illustrated in Figure 1, alignment can be pursued by changing the capability portfolio of the business, called active response, or by waiting for the marketplace requirements to change, called passive response.

Similarly, the Internet has altered the marketplace requirements such that traditional firms find their capabilities out of alignment; they have first and second-order capabilities when the market demands third-order capabilities. If the business chooses an active response, some method of acquiring the capabilities would be implemented. This might take the form of training, hiring, partnering, or purchasing tactics. The goal is an alignment of the business to the changed market requirements. This alignment is illustrated in Figure 2. The net result is that the business remains competitive in the new eCommerce environment.

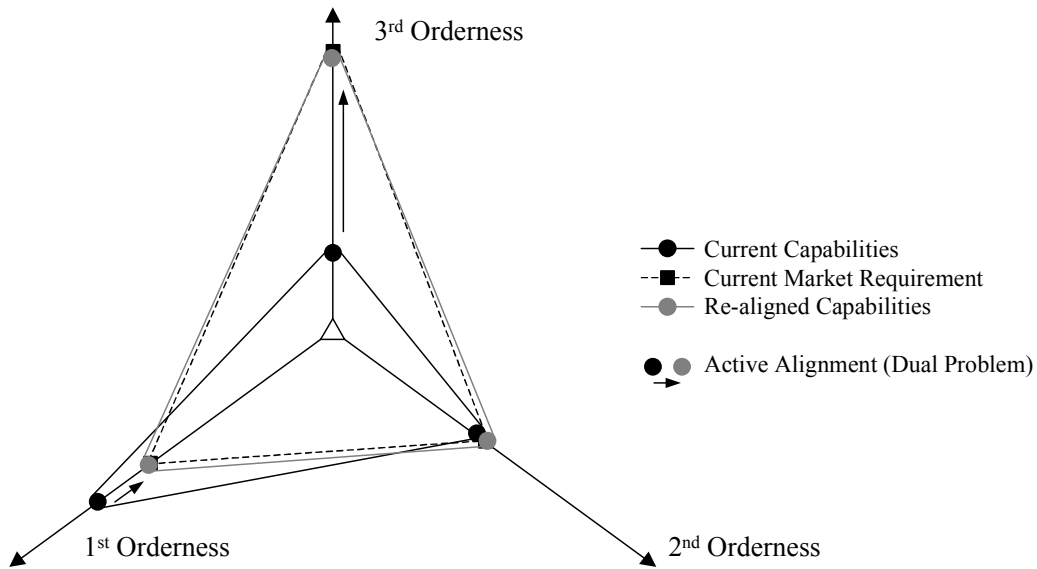


Figure 2: eCommerce Alignment – Active Response

However, the business may also choose a more passive response. Realizing that environmental requirements will evolve over time, and the capabilities needed to compete long term in the marketplace may not be the same capabilities required today, the business may decide to simply enhance its current capabilities and wait for the market to settle. With this tactic, the hope is that the marketplace requirements will settle into alignment with the business’s capabilities. If the business can survive the shift and the slow adjustments in marketplace, the passive tactic may realign the business as illustrated in Figure 3.

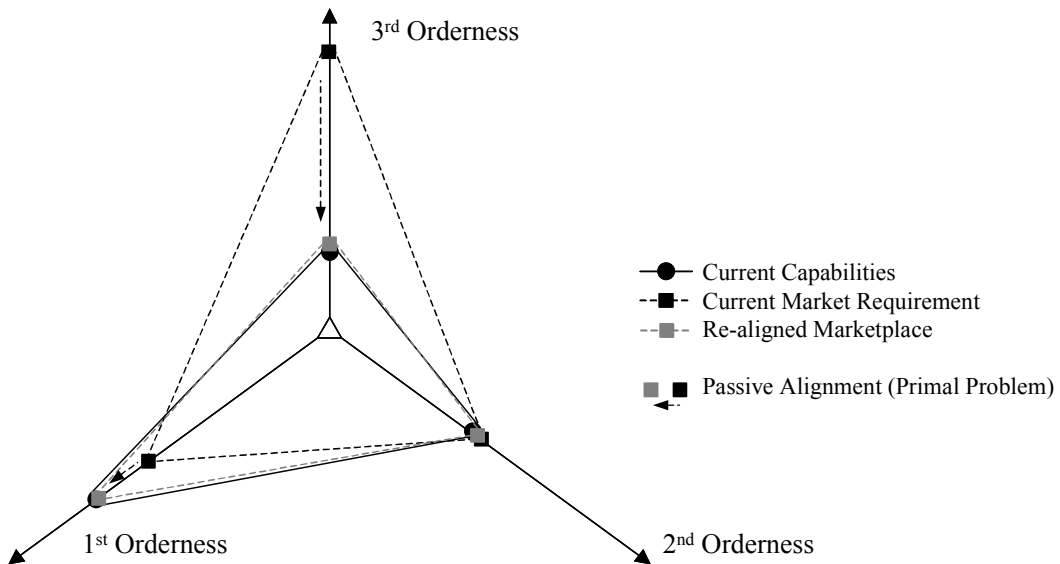


Figure 3: eCommerce Alignment – Passive Response

Business Product Portfolio Alignment

A similar alignment problem can be conceived where the objective is to align the business's people-competencies with the product portfolio it is offering in the marketplace. This is a common problem, one in which the business's product portfolio has been built over a long period of time and over this same period the competencies in the business have deteriorated due to lack of training investment, misaligned hiring, and attrition. By the time the business realizes that its people no longer fit its product mix, the business alignment may look like the one depicted in Figure 4.

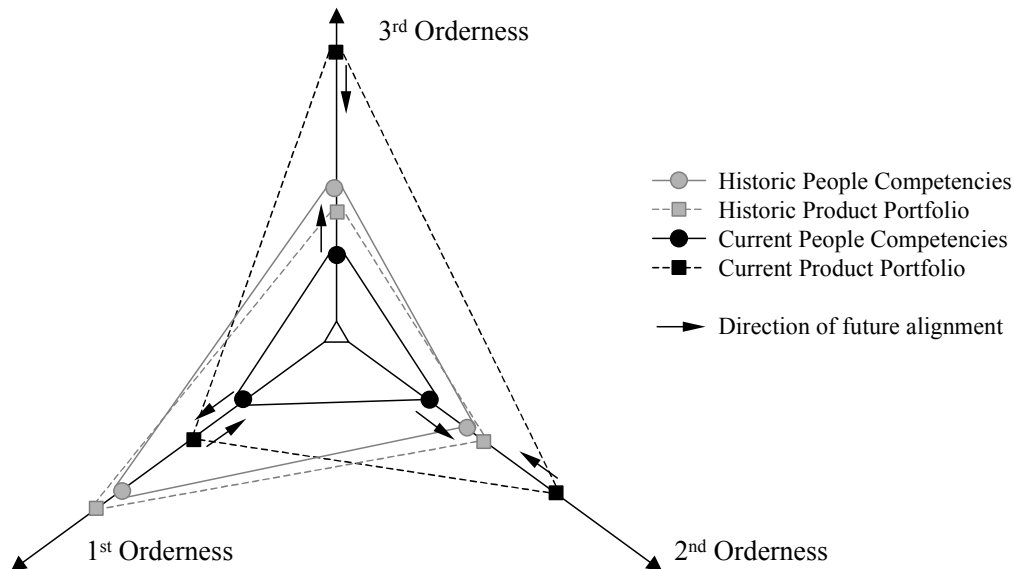


Figure 4: Product/People Misalignment

The business can react to this misalignment by taking a people focus, product focus, or a combination. A people focus suggests tactics that attempt to change the business's people competencies to fit the current product portfolio. This is equivalent to adjusting the decision problem approaches to fit the characteristics. Alternatively, tactics that focus on changing the product portfolio mix to fit the current competencies of the business indicates a product focus. This might involve a redefinition of the business's mission and is equivalent to adjusting the decision problem characteristics to fit the available approaches. It may be difficult to achieve complete alignment by focusing exclusively on either the business's products or the business's people. Therefore, a tactical combination is often implemented.

IDENTIFICATION AND FOCUSING CHANGE

The decision order alignment visualization described above provides an actionable tool for identifying the essence of a decision problem and focusing change. The visualization is designed to direct the decision-maker quickly to the dimension of misalignment. Having identified the decision order(s) that is (are) misaligned, an action plan can be developed that targets change directly on the characteristic and/or the approach elements.

Theory provides the direction. "Without theory, we make endless forays into uncharted badlands. With theory we can separate fundamental characteristics from fascinating idiosyncrasies and incidental features. Theory supplies landmarks and guideposts, and we begin to know what to observe and where to act." (Holland 1995, p. 5) Most conceptualizations of alignment correctly focus on the identification of a misalignment. However, they fail to

offer the theory needed to guide the decision-maker.⁷ Incorporating the decision order taxonomy into the alignment conceptualization provides the guiding theory.

The decision order taxonomy provides a unifying language in which all decision problems can be described. Under this taxonomy, confusion regarding strategy alignment, business alignment, competitive alignment, organization alignment, information alignment, and competency alignment is no longer necessary. Alignment is simply defined in terms of the decision problem's characteristic order and approach order. The decision order methodology provides a means of framing the decision problem so that alignment techniques can be applied.

The decision order visualization methodology provides the instrument needed to identify misalignment of non-decomposable problems. Non-decomposable problems are those problems that possess characteristics from all three decision-orders. These non-decomposable problems are described as having different levels of "orderliness." The alignment visualization allows the decision-maker to identify the decision problem's "orderliness" and to target the specific decision order(s) that is (are) not in alignment. Identifying the misalignment using the multidimensional visualization is the first step in achieving alignment.

⁷ For examples of misalignment identification without an underlying theory see Labovitz and Rosansky (1997), Carroll and McCrackin (1998), and Collins and Porras (1994).

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