

Toward epistemological identification of the four major mindscapes

Four major
mindscapes

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Received 15 February 2021
Revised 13 June 2021
12 August 2021
12 September 2021
Accepted 17 September 2021

Abstract

Purpose – Japanese American philosopher Magoroh Maruyama (1969) proposed the Mindscape theory, a macro model of cultural differences identification. The theory suggests inter-and intra-cultural heterogeneity and four major Mindscapes of H, I, S and G. He and his colleagues designed 64 graphic geometric patterns based on redundant and non-redundant complexity to recognize the Mindscapes in cultures. However, there is no method of identifying each Mindscape individually/separately. In other words, specificity is missing in this theory. Without such identification, the applicability of the Mindscape theory in international business is limited. This study aims to provide the needed specificity.

Design/methodology/approach – The present study applies Harvey's (1966) four epistemological systems to identify each of the four Mindscapes. According to Maruyama and Harvey, three of Harvey's four systems are identical to the three Mindscapes of H, I and G. If the authors can match the three Mindscapes with the three Harvey's systems, what remains the authors assume to be the fourth Mindscape.

Findings – The current study determined various graphic and geometric patterns associated with each of the four Mindscapes. In doing so, the study expanded the applicability of the theory in international business.

Research limitations/implications – Harvey (1966) administered nine psychological tests (instruments) to many subjects over nearly two decades to determine the four systems. Using nine major instruments is very challenging, demanding and time-consuming. For ease of application and saving time, the authors used one of these instruments as an example. Ideally, the authors should use all.

Originality/value – Mindscape theory suggests that each of the four salient Mindscapes is more relevant to a specific situation, such as human resource management, motivation, leadership, conflict resolution and others. By identifying each Mindscape, this study expands the use of Mindscape theory.

Keywords Mindscape theory, TOB tests, Maruyama, Cultural heterogeneity, Harvey's epistemological systems

Paper type Research paper

The data sets generated and analyzed in the current study are available on request.

The authors have no conflicts of interest relevant to the content of this article to declare.

There is no funding from public or private sources for this manuscript.

The assistance of Elizabeth Boyd, Kenneth Gilliam and Douglas Moodie (USA); Abdelmajid Bouziane and Samira Rguibi (Morocco); and Bolat Tatibekov (Kazakhstan) in data collection is gratefully acknowledged.



Introduction

Cultures are heterogeneous, so are the members of cultures. While physiological differences between individuals are noticeable, psychological variations are less apparent. Nevertheless, cross-cultural research has uncovered plenty of evidence for cultural differences. These differences are especially relevant to international managerial concepts, such as motivating employees, leading and supporting, negotiating and other practices. Many of these studies show the shade of stereotyping when applying cultural dimensions pioneered by Hofstede (1980) and the GLOBE project (House *et al.*, 2004).

Some researchers, however, propose a distinctively different perspective. Maruyama (1980), for example, asserted that there is intracultural and inter-cultural heterogeneity. In a stream of theoretical and empirical research, Maruyama offered his view on this issue and called it Mindscape theory (Maruyama, 1961, 1963, 1974a, 1974b, 1978, 1980, 1982, 1986, 1993, 1995, 2004). He claimed many Mindscapes but suggested that four major Mindscapes of H, I, S and G are more common among people globally. H stands for hierarchy and homogeneity. I is for independence, isolationism and individualism. S denotes stabilizing. G stands for generating. About one-third of the members of most cultures consist of the H types; another third is I, S, G and admixtures. The rest belong to other types (Maruyama, 1995, p. 220). We culled the salient characteristics of the four types from Maruyama's extensive writings. Table 1 shows a summary of these features.

Maruyama and his colleagues devised and applied a survey consisting of 42 graphic geometric patterns (Appendix 1) called TOB tests to examine the Mindscape theory. At first, Tokyo, Brussels and Bucharest were the testing sites for these patterns. Therefore, they were called TOB tests. Researchers excluded from the analysis patterns that respondents deemed to have cultural connotations. Thus, these graphic geometric patterns appear culture neutral. Also, TOB tests do not have the translation problems that beset international surveys of a verbal type.

The basis for these patterns was the understanding that there are individual and cultural differences between people in their preferences for aesthetics. For example, in aesthetics, redundant complexity (radial symmetries of various forms such as horizontal, vertical, diagonal, rotational, reversal and repetition) is more appealing to the members of most Western cultures. In contrast, in Eastern cultures, non-redundant complexity is more

| H-type | I-type | S-type | G-type |
|----------------|----------------|----------------|--------------------|
| Homogenist | Heterogenist | Heterogist | Heterogenist |
| Hierarchical | Isolationist | Interactive | Interactive |
| Eternal | Temporary | Stabilizing | Change-amplifying |
| Zero-sum | Negative-sum | Positive-sum | Positive-sum |
| Competitive | Uniquing | Cooperative | Congenerative |
| Classifying | Randomizing | Contextual | Context-generating |
| Sequential | Haphazard | Simultaneous | Simultaneous |
| Universalist | Individualist | Mutualist | Mutualist |
| Opposition | Independence | Absorption | Exploration |
| Boundary | Seclusion | No separation | Flow |
| Specialization | Specialization | Convertibility | Convertibility |
| One truth | Subjective | Poly-objective | Poly-objective |

Table 1.
Mindscape types and
their attributes

Notes: H → Hierarchy and homogeneity; I → Isolationism, individualism and independence; S → Stabilizing; G → Generating; There are more than four types; There are mixtures between types
Source: Information on Table 1 is culled from various manuscripts by Maruyama, 1960–2004

attractive to most people. In TOB test patterns shown in [Appendix 1](#), patterns 6, 17 and 20 are vertical and horizontal symmetries. Patterns 1, 6, 12, 17, 18, 20, 23, 27 and 37 are diagonal symmetries. The rotational symmetry of 90° is recognizable in patterns 6, 10, 17, 20 and 34. Patterns 6, 10, 17, 20, 27, 34 and 37 are rotational symmetry of 180° . One can recognize repetition in patterns of 15, 23, 27 and 29. Black/white reversal symmetries are in patterns of 27 and 37. Patterns of 11, 13, 16, 19, 22, 24, 25 and 32 represent non-redundant complexities.

Researchers have applied TOB tests in many countries [Fatehi *et al.* \(2015\)](#), [Fatehi and Priestley \(2018\)](#), [Maruyama *et al.* \(1998, 2002\)](#), [Yolles and Fink \(2009, 2016\)](#) and confirmed the Mindscape theory. However, neither Maruyama's research nor any of the many studies that followed attempted to identify the correspondence between the four major Mindscape types and the specific TOB tests' geometric patterns. For example, according to Fatehi and coauthors (2015, p. 296):

[. . .] we have not developed a way of identifying the four major types with the use of TOB Tests. In other words, which of the 42 patterns of TOB Tests are associated with which of the four mindscape types?

Mindscape theory suggests that specific international managerial situations, such as motivation, leadership, conflict resolution, and others, can better be managed with the application of the four major Mindscapes (Fatehi and coauthors, 2015; [Fatehi and Priestley, 2018](#); [Gammack, 2002](#); [Maruyama, 1980, 1982](#)). This suggestion is similar to [Fiedler's \(1958, 1967\)](#) assertion that various leadership styles are more effective under particular conditions. Therefore, we could match different leadership styles to the uniqueness of situations. In the case of Fiedler's suggestion, the "least favorable co-worker" instrument [Fiedler \(1958, 1967\)](#), [Rahimnia and Sharifrad \(2015\)](#) assists in identifying different leadership that would be appropriate for specific situations. However, for the Mindscape theory, we do not know how to identify each of the four Mindscapes separately.

In other words, as TOB tests do not specify which patterns are associated with each of the four Mindscapes ([Fatehi and coauthors, 2018](#)), the complete application of the theory in international business remains limited. Moreover, at present, there is no method of identifying each Mindscape individually/separately. Thus, although Mindscape theory is a macro model of identification of cultural differences, for the application to day-to-international business practices, which are at the micro-level, specificity is missing in this theory. Therefore, this study aims to provide the needed specificity.

Similar to [Fiedler's \(1958, 1967\)](#) way of identifying those best suited to carry out the different tasks, knowing how to identify various Mindscapes among the employees enables the organization to assign tasks to those appropriate to carry them out. Therefore, the present study aims to provide the identification of various Mindscapes among individuals. In so doing, we rely on the information gained from Harvey's four systems, as explained in the following.

We organize the rest of this paper as follows. The first part deals with the background literature and includes Maruyama's mindscape theory and Harvey's four epistemological systems. According to Harvey, these systems pertain to individual mental development through early experience and growth. Harvey used several psychological instruments (tests), including the Gough-Stanford Rigidity scale, in identifying the Four Epistemological systems. We rely on this scale to identify each of the four Mindscapes. The second part introduces the data and data analysis. The last part is the conclusion, implications, limitations and shortcomings of the study and recommendations for future research directions.

Background literature

With the application of cultural dimensions in cross-cultural research, stereotyping (attributing uniformly cultural characteristics to individuals in that culture) has crept into many scholarly undertakings. Various studies have confirmed the problems associated with stereotyping (Bigler and Liben, 2007; Fiske, 2000; Schneider, 2005). Most cross-cultural studies that have applied cultural dimensions inadvertently were affected by stereotyping. Others, however, reminded us that we should consider the existence of within and between country cultural heterogeneity (Au, 1999, 2000; Maruyama, 1961, 1963, 1974a, 1974b, 1978, 1980, 1982, 1986, 1993, 1995, 2004; Sivakumar and Nakata, 2001).

We have found that on critical psychological attributes, people are different. Moreover, the differences exist at both the within-country and between-country levels (Brockner, 2005, p. 355). This issue was highlighted in multilevel multivariate meta-analysis research by Steel and Taras (2010). They found that as much as 90% of cultural values' variation is due to within-country differences. Therefore, they emphasized that the average figures of national measures poorly represented individuals. Popov *et al.* (2019) found that we must consider cultural disparities to promote inter-firm cooperation at international companies. According to Kalasin (2021), senior foreign managers are active agents who can promote and implement essential changes because they possess different value sets, knowledge and experience. In effect, cultural differences among senior managers benefit organizations.

While scholars have acknowledged intra-cultural heterogeneity (Bock, 1988), many studies that followed the methodologies similar to those of Hofstede (1980) committed the "ecological fallacy" error. They attributed cultural level findings to individuals within cultures (Brewer and Venaik, 2012; House and Hanges, 2004). Kirkman *et al.* (2006, p. 311) reviewed 180 studies that had used research methodology similar to that of Hofstede, stated that these research studies had "[. . .] said less about what his framework does not tell us". Mindscape theory does not make such an assumption. It accepts diverse perspectives, values, mentality, logic and behavior within and between cultures.

Maruyama's mindscape theory and Harvey's four epistemological systems

When two scientists, independently and without knowledge about each other's work, propose similar concepts and theories, the value of that proposition is much higher than otherwise. This occurrence is akin to a replication that corroborates the original research findings. Of course, the importance and value of replication in research studies are well-known (Aquinin *et al.*, 2017; Meyer *et al.*, 2017).

According to Maruyama (1980, p. 956), in a chance visit and discussion at the University of Colorado with Harvey (1966), both noticed that three of the four Mindscapes were identical to three of Harvey's four systems. In the following, we present a discussion of both Maruyama and Harvey's works.

Maruyama's mindscape theory

Maruyama's research and writings on the Mindscape theory span four decades up to the 2000s. Mindscape theory suggests that people are psychologically different (various Mindscapes), within and across cultures or epistemological heterogeneity (E.H.). There are multiple Mindscapes. Cultural differences and Individual Heterogeneity Across Cultures is because one kind of Mindscape, for various reasons, becomes dominant and suppresses, transforms or ignores non-dominant ones.

Mindscape theory has been applied to various fields of study and disciplines by many scholars (Boji, 2017; Caley and Sawada, 2000; Dockens, 2009; Fatehi and coauthors, 2015, 2018; Fatehi and Priestley, 2018; Gammack, 2002; Hatt, 2009; Hentschel and Sumbadze,

2002; Noe and Alroe, 2005; Venaik and Midgley, 2015; Yolles and Fink, 2009, 2016). The application of Mindscape theory offers many advantages, as explained below.

The H Mindscape prefers hierarchy or standardization and rank order. This type believes that subcategories should be neatly grouped into super-categories. To this Mindscape, domination by the strongest is natural and acceptable. This kind of Mindscape accepts that the majority decides for all, including the minorities, and that there is only one truth applicable to all, whether values, policies, problems and priorities. Deductive logic is axiomatic and demands sequential reasoning. Cause and effect relations may be deterministic or probabilistic.

H Mindscape prefers formalization, rules, homogenization and control. It does not like variety, is functionalist and is goal orientated. The H Mindscape arranges objects in neat categories, looks for the opposites and places things between opposing ends. The H Mindscape believes in the existence of one truth, competes with others and thinks that one's gain is someone else's loss. In effect, this type acts in a zero-sum game fashion. This perspective is more prevalent in Europe and some Islamic cultures, emphasizing procedure, method and rule.

Mindscape "I" stands for individualistic, isolationist, independent, random and heterogeneous. This type believes that only individuals are real, even in the aggregated form, the society. The emphasis is on individual values, self-sufficiency and independence. In designing things, this type favors the random, the capricious and the unexpected. "I" type Mindscape avoids sequential ordering, scheduling and planning. The "I" type does not believe in non-random events. There are no universal principles. We should consider contingency rules and accept that every question has a unique answer. This type dislikes homogeneity and looks for freedom from interference. Also, believes in self-sufficiency and subjectivity.

Mindscape S stands for stabilizing, interactive, homeostatic and heterogeneity. The following are characteristics of S Mindscape: Society consists of heterogeneous individuals engaged in non-hierarchical interaction for mutual advantage. Interdependencies determine the relationships. It is desirable to be different. The differences among parts will contribute to the harmony of the whole and maintain the natural equilibrium. Values cannot be rank-ordered as they are interrelated, and it is desirable to avoid repetition. This type believes cause and effect relationships that move in a loop apply to everything. Mindscape "S" believes that categories are not mutually exclusive. Such a Mindscape feels that poly-ocularly or cross-subjectively is more valuable than objectivity and that people should consider multiple viewpoints (poly-ocularity) as it contributes to our understanding. This type also believes that context determines the meaning, interaction is mutually beneficial, and the diversity of perspective is helpful in that it results in computing the invisible dimensions.

The concepts related to the G Mindscape are generating, interactive, heterogeneistic and morphogenetic. The S and the G Mindscapes are similar, except that the G assumes interaction creates new patterns. Other characteristics of this type are that heterogeneous individuals interact in a non-hierarchically manner for mutual benefit. Such interaction generates new designs and harmony. The S Mindscape believes that nature is continually changing, which would require us to make an allowance for change. The G type accepts that values interact, resulting in the generation of new values and meanings. This kind of Mindscape values the deliberate (anticipatory) incompleteness. It believes in the dominance of a heterogenizing style. Such a form increases variety; it develops new patterns, spontaneity, amplifies growth and polyocular vision. This type of Mindscape predominates

in the African Mandinka culture (Camara, 1975). We could consider this kind the creative group nourished by the emergent patterns of surprise, the unforeseen and the new order.

Venaik and Midgley (2015, p. 1061) called these Mindscapes “archetypes”. They asserted that “Maruyama’s four Mindscapes can also be roughly divided into more self-enhancement (“H” and “I”) and self-transcendence” (“S” and “G”). Similar to the suggestions of Mindscape theory, they recognized similarities and differences within and across nations. However, they did not attempt to provide ways of identifying specific Mindscapes.

Harvey’s four epistemological systems

Through extensive writings in social psychology and data analysis from more than 1,400 students of various ages of both genders, Harvey (1966) formed his four epistemological systems. According to Harvey, all physical and conceptual systems evolve through the process of differentiation and integration. A simplified example could be physical differentiation among objects with no perceived commonalities among them. The integration of them forms various categories such as solids, liquids or gases. Conceptually, organizations are home to various specialties. As specialties increase, integration into different departments allow proper functioning of the organization as a system. systems are spread along this spectrum between differentiation and integration. We organize conceptual systems through a saccadic process akin to visual scanning. From the observation of the environmental phenomenon, we form conceptual systems saccadically. The saccadic process assumes that we move between the two states of differentiation and integration. Conceptual systems tend to remain either a closed system of a highly unarticulated shape or allow differentiation and integration to form and, in effect, be open systems. The situation between these two states of open and closed systems ranges from concreteness to abstractness with clarity-ambiguity, compartmentalization-interrelatedness and centrality-peripherality.

The process of differentiation and integration creates variations in essential dimensions of the system. The concreteness-abstractness is one of these variations (Harvey *et al.*, 1961; Harvey, 1966):

The more concrete end of the dimension represents the state of minimal differentiation within the concepts and little or no integration among them. [Conversely,] the more abstract end of the continuum represents high differentiation and integration across a wide range of domains (Harvey, 1966, p. 42).

Harvey (1966) administered nine psychological tests (instruments) over several years – including Gough-Stanford Rigidity Scale – to many undergraduate students to determine the four systems. Table 2 provides information on these instruments. He deduced four concreteness-abstracts levels and asserted that individuals develop these four levels and their admixture through experience and socialization. He suggested that the individuals’ early learning shepherded by parents is the basis for these systems to evolve. These four basic levels represent nodal points on a continuous dimension ranging from lesser to greater abstractness.

According to Maruyama (1980, p. 595), H, I and G Mindscape types are identical to systems One, Two and Four of Harvey’s. However, system three of Harvey is different from the Mindscape S type. Below, we present a highly simplified summary of the four systems’ significant characteristics (Harvey, 1966, pp. 44–46).

System one. System one is associated with high absolutism and closedness of beliefs. It is high on evaluativeness and highly identifies with authority, accepts social roles and status positions. It is high on conventionality, ethnocentrism and authoritarianism. System one is

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| | 4 Systems' scores on various scales | | | |
|----------------------|-------------------------------------|---------------|-----------|-----|
| | Highest | High | Moderate | Low |
| Verbal intelligence | S4 and S2 | | S3 and S1 | |
| Cognitive complexity | S4 | S3 | S2 | S1 |
| Religiosity | S2 and S4 | | S1 and S3 | |
| Authoritarianism | S1 | S3 | S2 | S4 |
| Dogmatism | S1 | S2 | S3 | S4 |
| Rigidity | S1 | S2 | S3 | S4 |
| Self-causality | S4 | S3 | S1 | S2 |
| Machiavellianism | S2 | S1, S3 and S4 | | |
| Need for affiliation | S3 | S1 | S4 | S2 |

Table 2.
Scales used by Harvey (1966) to identify four epistemological systems

Notes: A two-cell combination means differences were not significant. Besides the nine scales listed above, there were a few subscales. This table does not include them

Source: Harvey (1966)

the highest on rigidity and F-scale. This system corresponds to the H-type Mindscape as proposed by Maruyama (1990, 2004). System one has the highest rigidity score.

System two. Characteristics of system two are rebellion against social prescriptions, high drive toward autonomy, high avoidance of dependency on tradition and God. This system is the lowest among the four systems on F-scale, third among the four systems on abstractness and the second-highest among the four systems on rigidity. I Mindscape type is identical to this system.

System three. System three is the second least rigid system and is the lowest among the four systems on self-causality, autonomous internal standard in the social sphere, and positive ties to prevailing social norms. On the other hand, it is the second-highest among the four systems on F-scale and the second-highest among the four systems on abstractness. Thus, this system is different from the S Mindscape type of Maruyama (1980).

Systems four. This system corresponds to the G Mindscape. It is the lowest among the four systems on rigidity, the weakest among the four systems on self-causality, has autonomous internal standards in the social sphere, and positive ties to prevailing social norms. On the other hand, it is the highest among the four systems on the F-scale and highest among the four systems on abstractness.

Method

In this study, we followed Fatehi and coauthors' recommendation (2018) that applying Harvey's (1966) epistemological systems would be helpful. Both Maruyama and Harvey Maruyama (1980, p. 596) noticed their theories' similarity in a chance visit and discussion. They realized that H, I and G are identical to the one, two and four epistemological systems. However, system three of Harvey was different from the Mindscape S type. We relied on this similarity between the two concepts to determine which TOB test patterns are related to each of the four Mindscapes.

TOB tests patterns recognize heterogeneity within and between cultures but do not go further and do not distinguish between various Mindscapes using TOB tests (geometric patterns). Without identifying individual Mindscapes, the applicability of the theory would be limited. Therefore, we will complete this process and identify each of the four Mindscapes with Harvey's four systems' aid. This process means finding correspondence between Harvey's Systems 1–4 with Mindscape H, I, S and G.

Based on Maruyama's assertion, three Mindscapes and three of the four Harvey's systems are identical. Therefore, we could relate scores on Harvey's three systems to scores on TOB test patterns. When we match the three Harvey's systems and three Mindscapes, we assume what is left would be the fourth Mindscape S. The result would be learning which TOB test patterns (geometric shapes in [Appendix 1](#)) identify which major Mindscapes. The following explains the details of this process.

[Table 2](#) provides information on Harvey's primary instruments (questionnaires/surveys) for measuring the four epistemological systems. For the present study, the process of using several primary instruments that Harvey used over many years – in the determination of his four epistemological systems – is very challenging, demanding and time-consuming that would take an extended time. Therefore, for the ease of application, the time required, and simplicity, we decided to use one of these instruments, namely, the Gough-Sanford Rigidity Scale ([Appendix 2](#)), instead of all. This scale is short, with only 22 items. Therefore, it would take respondents/subjects no more than a few minutes to complete. In addition, this instrument does not have the other scales' ideological connotations, such as the F-scale or Religiosity Scale.

Instruments

The survey consisted of two parts on a paper form. The first part was the Gough-Sanford Rigidity Scale, which had 22 items. The range was 1 to 10, with one representing minimum, very seldom and 10 as maximum, always. We used respondents' positions on this scale to identify them on Harvey's four systems. The second part was the 42 geometric patterns of TOB tests ([Appendixes 2 and 1](#), respectively). Respondents rated these shapes' attractiveness from 1 to 7, with seven being "beautiful" and one "not beautiful/ugly". We proctored the two parts of the surveys to each subject. We considered a score of 5, 6 and 7 (above Midsection 4) to indicate the subjects' selection.

Participants

Subjects for this study were 159 undergraduate students in the three countries of the USA, Morocco and Kazakhstan. We used convenience sampling, which is typical in business and the social sciences. The response rate for participants was 80%, mitigating issues with potential non-response bias and the limits with the generalization of results. They were all proficient in the English language and voluntarily participated in the study. [Smith and Schwartz \(1977\)](#) asserted that teachers and students are the best populations for analyzing cultural values. This study aimed to identify geometric shapes (TOB tests patterns) that could represent Mindscape types. Therefore, as long as we administered both instruments, the Rigidity Scale and the TOB tests, to the same subjects, their attributes as students were not of concern. Thus, the use of student samples was acceptable. As Bello and coauthors ([Bello, 2009](#), p. 362) mentioned: "Findings that reflect the fundamental nature of humanity are likely to generalize across diverse populations, making the use of student samples legitimate". Additionally, Harvey drew his considerable-sized sample from the student population over many years. Similarly, we would create Rigidity quartiles, as he had indicated in the Gough-Sanford Rigidity Scale administration.

The Institutional Review Board of the US University approved administering the surveys. Except for age categories and gender, we did not collect other personal information ([Table 3](#)).

Data analysis approach. This study aimed to determine which group of TOB tests patterns represent each of the four major individual Mindscapes proposed by Murayama. Like Fatehi and coauthors' (2020) study, we pooled responses for all subjects for analysis.

The data pooling was justified because the study was not about variations among the USA, Morocco and Kazakhstan cultures. The study was to identify each Mindscape regardless of the culture/nation with which subjects were associated. The basis of data pooling is the confirmation by many studies that inter-cultural and intra-cultural heterogeneity exists (Dockens, 2009; Fatehi and coauthors, 2015; Gammack, 2002; Hatt, 2009; Hentschel and Sumbadze, 2002; Maruyama, 1980, 1982, 1986, 1993, 1995, 2004; Yolles and Fink, 2009; Venaik and Midgley, 2015). In each culture, some individuals are similar to others in their own or other cultures. This similarity is in mentality, beliefs and reasoning. Therefore, we considered the data pooling appropriate for this study.

Categorization of the rigidity scale. We divided and categorized respondents into four groups based on their scores on the Rigidity Scale. We categorized respondents according to Harvey’s four epistemological systems (Table 2). The results – representing Harvey’s four systems – were matched with the TOB patterns as selected by the same respondents.

The Rigidity questionnaire had a range of 22–220, and responses were normally distributed. Dividing the range (220–22 = 178) among the four systems, we arrived at a little more than 44 for each system. Therefore, scores were segregated into 4 quartiles for four categories of S 4 (low) = 1–44, S 3 (moderate) = 45–89, S 2 (high) = 90–134 and S 1 (highest) = 134–178. These groups represented epistemological systems on the Rigidity Scale. We used these quartiles to find correspondence between them and TOB tests patterns.

Categorization of TOB tests patterns. We relied on Maruyama’s assertion to segregate groups of TOB tests items that we could relate to Harvey’s four systems, and thus derive information about Maruyama’s four Mindscape types. He claimed that he and Harvey agreed that three of Harvey’s four systems are identical to Mindscape types H, I and G. Therefore, we matched the Mindscape types with the four quartiles of the Rigidity scale.

We regarded patterns (selected by the subjects) that fell within each quartile (normally distributed responses) as belonging to that appropriate category or Systems 1, 2 and 4. Then, we assumed that what remained was Mindscape type S. The logical end of this process was identifying Mindsapes H, I, S and G with scores on the Rigidity Scale and TOB tests patterns. Figure 1 identifies these Mindscape types with their appropriate TOB tests patterns. Finally, we present the results in the following and show them in Figure 1.

Results

Rigidity Group 1: The highest scores or quartile 1 (System 1) corresponds to Mindscape H represented by items: 3, 5, 7, 9, 11, 22, 24, 25, 32, 35, 36, 42. Appendix 1 and Figure 1 for shapes and numbers.

Rigidity Group 2: The high scores or quartile 2 (System 2) corresponds to Mindscape I represent by items: 4, 12, 13, 16, 21, 28, 34 and 41, shown in Appendix 1 and Figure 1.

| | Age | | | | Gender | | Totals |
|------------|-------|-------|-------|-----|--------|--------|--------|
| | 17–24 | 25–29 | 30–34 | >35 | Male | Female | |
| USA | 41 | 6 | 1 | 0 | 24 | 24 | 48 |
| Morocco | 43 | 5 | 4 | 7 | 36 | 22 | 58 |
| Kazakhstan | 52 | 0 | 0 | 0 | 27 | 25 | 52 |
| Total | 136 | 11 | 5 | 7 | 87 | 71 | 158* |

Note: *One student from Morocco did not report gender information

Table 3.
Demographics by
age, gender and
nationality/ethnicity

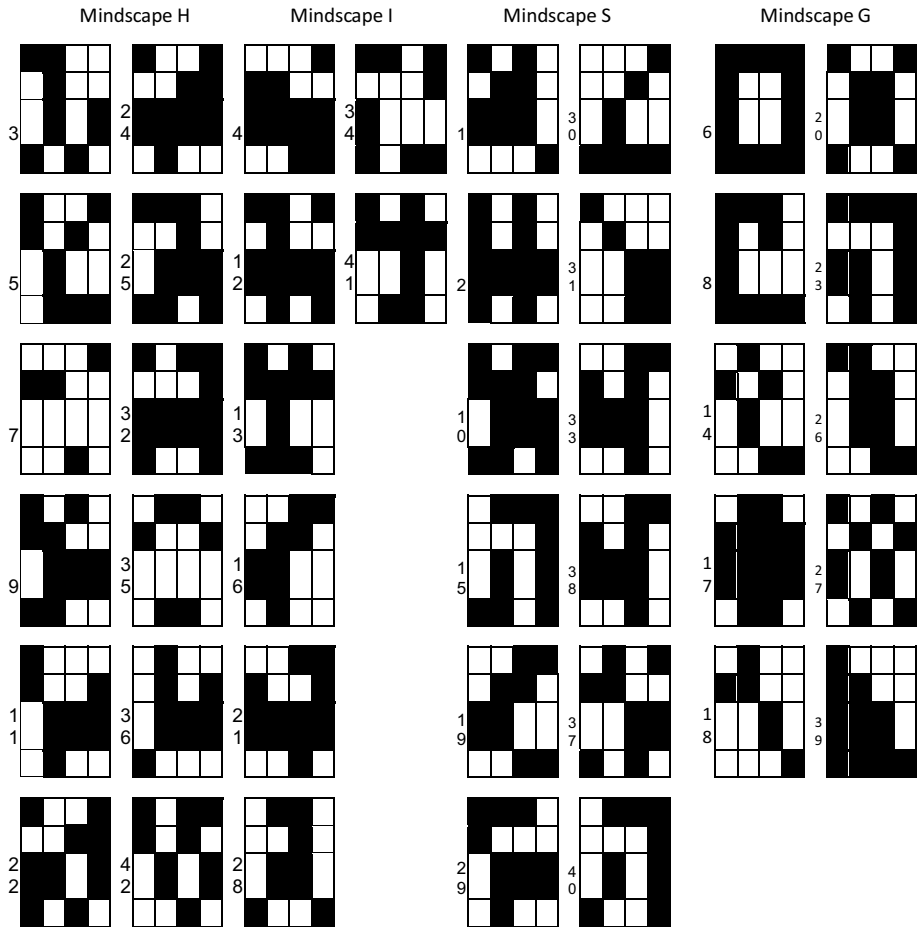


Figure 1.
Mindscape types on
TOB tests patterns

Rigidity Group 3: The moderate scores or quartile 3 (System 3) corresponds to Mindscape S represented by items: 1, 2, 10, 15, 19, 29, 30, 31, 33, 37, 38 and 40, shown in [Appendix 1](#) and [Figure 1](#). These geometric patterns remained after we identified the three Rigidity Groups of 1, 2 and 4. Our assumption of identifying these patterns as Mindscape S was based on Maruyama's assertion that Harvey's System 3 and Mindscape S were not similar to each other. Therefore, when Harvey's Systems 1, 2 and 4 corresponded with Mindscapes H, I and G, what was left assumed to be Mindscape S.

Rigidity Group 4: The low scores or quartile 4 (System 4) corresponds to Mindscape G represented by items: 6, 8, 14, 17, 18, 20, 23, 26, 27 and 39, shown in [Appendix 1](#) and [Figure 1](#).

Conclusion, limitations and directions for future research

Cultural differences can create difficulties or even cause failure in international business transactions ([Cardon et al., 2011](#); [Lou and Shenkar, 2011](#); [Rugman et al., 2011](#); [Stahl and Tung, 2015](#); [Tihanyi et al., 2005](#)). People from various cultures view the same issue

differently. These difference in viewing the same issue or problem is because cultures instill in people various perspectives. Many research studies operationalized the basis of these variations by proposing different models and frameworks to facilitate business conducts globally (Hofstede, 1980; Javidan and Teagarden, 2011; Javidan and Bowen, 2013). Maruyama's Mindscape theory is among these models. By identifying different Mindscapes among people globally, we can create appropriate conditions to facilitate international business conduct. However, the Mindscape theory is a macro model and falls short in applying to specific and micro levels. This shortfall is due to the lack of specificity in identifying each of the four Mindscapes using TOB tests. TOB tests do not provide a correspondence between geometric patterns and each Mindscape. In the present study, we provided a method of creating such specificity.

In the current study, we demonstrated a way of identifying individual Mindscapes. In so doing, we moved from the macro-level to micro and specific situations. Identification of various Mindscape types enables the organization to avoid the pitfalls of a random selection. As a result, in the conduct of international business, we can reduce conflict considerably, and the outcome could be more acceptable to all parties. Furthermore, organizations could benefit from knowing the composition of the four Mindscapes among their employee. For example, if both sides take more demanding positions in any negotiation – that is quite often the H Mindscape approach – most likely, the failure is the outcome. In situations like this, Mindscape theory suggests it is inappropriate to select a person of H Mindscape to negotiate a contract. In this regard, the knowledge of how to identify various Mindscapes would be beneficial.

Identifying individuals with various Mindscapes offers a variety of advantages. For example, in conflict resolution matters, such as labor-management contract negotiations, many recommend adopting a win-win strategy (non-zero-sum game) instead of a win-lose strategy (zero-sum game). Unfortunately, contentious issues mar many labor-management negotiations. In these negotiation sessions, each side takes an extreme position knowing well that, in the end, they have to compromise to consummate a deal successfully. In those cases, according to the Mindscape theory, selecting an H Mindscape to negotiate a contract is not an appropriate choice.

The success in industrial relations often hinges on the approach that each side, the management or the labor, takes toward the negotiation. The H Mindscape adheres to the belief of the majority or consensus rule. Such a position assumes that an organization would buy and, if not needed, discard workers very much similar to other items. Therefore, this position advocates that management should have total control. Such a view forces labor-management relations into a win-lose proposition. In a typical labor contract, management negotiators strive to keep labor costs down. On the other hand, if an H-type person represents the labor side, he/she seeks to negotiate the highest possible wages and the right package of fringe benefits. These two opposing positions could create an impasse and the negotiations could fail.

Another example is that it would be helpful to know the Mindscape types of the participant is in group decision-making. The H Mindscape rule by majority or consensus making looks pretty desirable. However, the majority rule means domination by quantity, and very seldom, if ever, all people involved in a decision process have the same position. Those who have a different view are obliged to agree with others for the sake of maintaining consensus. We often gain consensus at the cost of peer-imposed and self-imposed *acquiescence*. Often, we discard the difference in producing a complete agreement. The S or G Mindscapes do not ignore the differences. In a positive-sum perspective, those who benefit

less or do not benefit at all are kept in mind for future considerations so that in the long run, all involved emerge, more or less, getting help similarly.

Some people equate economic prosperity and growth only with private business activities and advocate for a smaller government. The H Mindscape that takes this position assumes that a smaller government is a better government, without considering that its size dictates its ability to provide many services. Also, the efficiency and expertise of personnel influence the provision of necessary government services. The S or G Mindscape, however, has a different and more realistic view. They believe that it is possible to have a more efficient government without reducing government services beneficial to people. In the same vein, environmentalists following the H Mindscape assume that we should not change nature and our environment, and industrial activities increase the ecosystem's deterioration. Nevertheless, if we follow the S or G Mindscape positions, the environment keeps changing even without human activities, which is the case regardless of the particular perspective. Positive-sum relations are the basis of the ecosystem, and we could ingeniously design industrial operations in a way that may not necessarily be harmful to the environment.

If the present international immigration pattern continues, before long, many countries would have a diverse population composition consisting of various Mindscapes, more prevalent than the current trends. In addition, increasing migration and cross-border marriages are altering the uniformity of ethnic characteristics of many countries. Dealing with and benefitting from this diversity without recognizing its basis would be problematic.

The advantages of applying Mindscape theory in society would be minimal without knowing how to identify each Mindscape and differentiate among them. In this study, we offered a preliminary way of just doing that. Our research and its methodology make it possible to distinguish the four major Mindscapes. For expediency and ease of application, the current study used only one instrument among many that Harvey had applied to determine his four systems. Future research should use more of those instruments, and ideally, all of them. However, such an undertaking would be very time-consuming. Therefore, a gradual increase in applying various instruments that Harvey had used appears to be more realistic.

At present, we have a solid theoretical foundation and empirical data upon which rests the logic of the Mindscapes. To fully benefit from the Mindscape theory, identifying each of the four Mindscapes is necessary. How to get to this point is an open question. We offered a methodology. Of course, this is not necessarily the only way of identifying the four major individual Mindscapes.

In addition to applying Harvey's (1966) epistemological systems, we could explore other ways of identifying each of the four individual Mindscapes. For example, Boji (2017) has devised an instrument to use in leadership training. He developed this instrument based on the four Mindscapes of Maruyama. Thus, this instrument has the potential for the identification of the four Mindscapes separately.

While the present study showed a methodology to identifying each Mindscape, it left unexplored some relevant areas. For example, we do not have much information about the nature and attributes of Mindscapes. For instance, it is not clear which aspects of Mindscapes are innate and learned (adopted). Put it differently, which elements are physiological and which are psychological. Also, can the learned (adopted) Mindscapes be unlearned?

Clarifying these aspects would go a long way in improving our understanding of E. H. and heterogeneity across cultures. These issues are separate subjects left to future studies.

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Further reading

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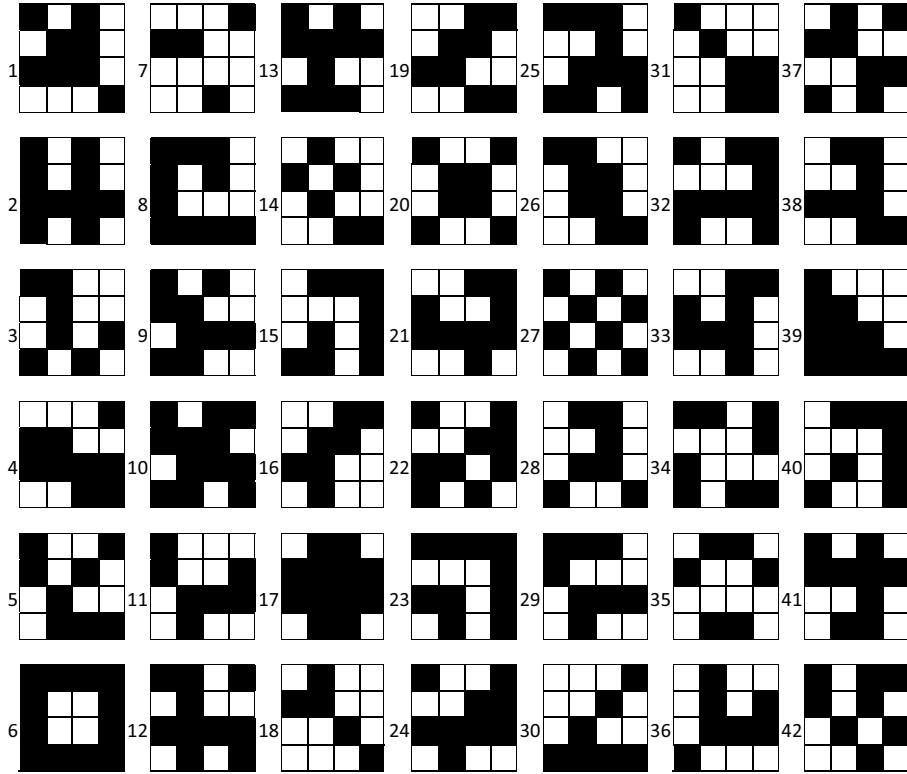


Figure A1.
TOB test patterns

Appendix 2. The Gough-Sanford rigidity scale

Range: 1–10:

- 1 = disagreement, minimum, very seldom. 10 = complete agreement, maximum, always.
1. I am often the last one to give up trying to do a thing.
2. There is usually only one best way to solve most problems.
3. I prefer work that requires a great deal of attention to detail.
4. I often become so wrapped up in something I am doing that I find it difficult to turn my attention to other matters.
5. I dislike changing my plans in the midst of an undertaking.
6. I never miss going to church.
7. I usually maintain my own opinions, even though many other people may have a different point of view.
8. I find it easy to stick to a certain schedule; once I have started it.
9. I do not enjoy having to adapt myself to new and unusual situations.
10. I prefer to stop and think before I act even on trifling matters.
11. I try to follow a program of life-based on duty.
12. I usually find that my own way of attacking a problem is best, even though it does not always seem to work in the beginning.
13. I am a methodical person in whatever I do.
14. I think it is usually wise to do things in a conventional way.
15. I always finish the tasks I start, even if they are not very important.
16. I often find myself thinking of the same tunes or phrases for days at a time.
17. I have a work and study schedule which I follow carefully.
18. I usually check more than once to be sure that I have locked a door, put out the light or something of that sort.
19. I have never done anything dangerous for the thrill of it.
20. I believe that promptness is a very important personality characteristic.
21. I am always careful about my manner of dress.
22. I always put on and take off my clothes in the same order.

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Four major
mindscapes

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