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Visual sign framing in nonverbal communication: Signs from Hadhrami Arabic and Polish contexts

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Abstract

This study investigates how individuals from different cultures can perceive and comprehend visual signs-graphic symbols used as communication medium. More specifically, the fundamental objective is to illuminate the primary factors behind understanding and realization of graphic symbols and their referential meaning by students in Hadhramout-Yemen and Poland. Discussion focuses on cultural underpinnings and cognitive development, along with insights from four frameworks: semantic frames (Fillmore, 1985; Lakoff, 2004), cultural anthropology (Hofstede, 1980, Katan, 1999), prototypical theory (Rosch, 1978), and the theory of reconceptualization emergence (Lewandowska-Tomaszczyk, 2010). This framework consists of a multimodal reconceptualization involving schematization, categorization, and conventionality to determine how viewers interpret signs. Participants were presented with graphic signs, and a test was conducted on how well they understood the signs and their meaning. Results of participants' reactions we obtained show subtle variations in the way viewers realize and perceive signs' messages. The conclusion suggests that the cultural specificity, prototypicality, and uniqueness of the referent influence the viewers' understanding of graphic signs and the meaning of their referents.

Keywords: Arabic; culture; framing; graphic sign; Hadhramout-Yemen

1. Introduction

People across nations use visual signs as a graphic symbol system for communication. This system based on symbols "semantic frames" and their referential meanings. However, there is a degree of misunderstanding of these signs if seen as belonging to different cultures, and due to globalization and rapid progress in knowledge, the factors that influence a sign's understanding should be determined. This research aims to identify factors that affect viewers' understanding of graphic signs used socially for communicative purposes in Hadhramout-Yemen and Poland. Conceptualizing graphic signs based on *signs* and their *semantic frames.* Those two concepts are closely linked to this ubiquitous phenomenon known as a nonverbal communication, so-called because the viewers often recycle frames and compositional messages of signs to acts reflected in their everyday behavior and practice. This study investigates this phenomenon, it is argued, effective messages and information can be sent by utilizing graphic symbols, visible signs, icons, and colors when the semiotic system functions as a system for communication (Jakobson, 1984).

2. Theoretical background

The studies of communication (verbal/nonverbal) across cultures has become increasingly important (Graham, 1999). As result of the constant researches in cultural anthropology, a new field has been emerged which is labeled *culturology*. One of the basic characteristics of the culturology is that there is an organic link between *culture* and *communication*. The study of *intercultural communication* has tried to answer the following fundamental question; How do people understand each other when they do not share a common cultural experience? The answer of this, reveals not only the relation between humans, language[3], and the way of thinking rather highlights the importance of complex interplay between culture and language, providing us a comprehensive picture of how language and culture affect thought and behavior. However, the interface processing of culture, signs and communication raises some questions; if a sign is a communication, and is the vice versa true? how does the human mind receive, interpret the symbolic message culturally based via signs and pictograms? Why semiotics mostly associated with culture?

Hall (1990, p. 4) believes that "culture is communication and communication is cultures." This also corresponds with Levi-Strauss's view (1971), who thinks that culture is shared symbolic systems that are 'creations of the mind.' It is not merely material rather than a social system that determines the people's way of thinking, way of life in a particular environment (Goodenough, 1964). In

this sense, any culture is primarily a system for creating, processing, sending, and/or storing collective information in human brain. In other words, culture is collective programming of people's mind (Hofestede, 1991). It is communicated by the verbal language as a channel of communication. On the other hand, it is worth mentioning that conventions, and information about any culture are communicated by other means. For examples, in case of nonverbal communication, we communicate with signs, pictograms, icons, significations, symbols, even gestures. That is, the nonverbal behaviour is one that is common to a group of people who share a similar culture. In other words, the way we sit, the gestures we make, the way we talk, how much eye contact we make – all of these are nonverbal means of communication. Generally speaking, the verbal idea/messages are communicated by the use of words, *verbal reconceptualization* or *verbal language representation*, whereas utilizing visual sign, for a communicative purpose, can modify, change, complement, or going along with the idea or meaning of the verbal message (Han & Rammal, 2006). Nonverbal communication is expressed through non-linguistic means. the actions or attributes of humans, including their appearance, use of objects, sound, time, smell, and space, that have socially shared significance, and stimulate meaning in others, that can be manifested in practice and behaviour. In this sense, cultural values, regulations, instruction, or even conventions of a group of people in particular. and community, in general, can be expressed by utilizing visual signs socially

The first scientific study of nonverbal communication is found in Darwin's *The Expression of the Emotions in Man and Animals* (1872/1897). Charles Darwin argued that all mammals reliably show emotion in their faces. This integration between language and emotion has been taken up by several fields including cognitive linguistics, psycholinguistics, semiotics, and cultural anthropology. Scholars in these fields usually use a strict sense of the term *verbal*, meaning „of or concerned with words, and do not use verbal communication as a synonym for oral or spoken communication. Thus, vocalized sounds that are not considered words, such as grunting or or singing a wordless note, are nonverbal. Sign languages and writing are generally understood as forms of verbal communication, as both make use of words, although like speech, they may contain paralinguistic elements and often occur alongside nonverbal messages. Nonverbal communication is universal occurrence for the expression of moods states, such as happiness, sadness, anger, and fear through sensory channels – sight, sound, smell, touch, and taste. As such, words are meaningless without the expression of our feelings via facial expressions or gestures. This has been highlighted by Givens (2000) as follows:

> When we speak (or listen), our attention is focused on words rather than body language. But our judgment includes both. An audience is simultaneously processing

> both verbal and nonverbal cues. Body movements are not usually positive or negative in and of themselves; rather, the situation and the message will determine the appraisal. (Givens, 2000, p. 4)

Generally speaking, communication occurs in two forms. The first, known as *explicit* communication, is verbal. Verbal communication is communication using words and sounds, it plays a significant role in the daily interaction between an *addresser* and *addressee* in terms of individuals and groups. The second form is *implicit* communication, also known as nonverbal communication (NVC). NVC involves the communication of information by the use of signs, pictograms, icons, symbols, cartoons, gestures, body movements, eye contact, facial expressions, and the pace of speech, among other things. In short, NVC refers to the communication of information without the use of speech, this is something humans learn to do before they develop the capacity for verbal communication (Miller, 2005). Nonverbal signs, pictograms, icons, symbols, and even gestures are widely used. Visual signs play a crucial role in communicating messages via non-verbal sign channels, they exist independently rather than in verbal communication (McNeill, 2000). A component of part of body language, the study of gestures is also known as *kinesics*, another word for movement (Hans & Hans, 2015). Hand gestures specifically tend to have positive and negative impacts on the information received by the receiver (McNeill, 2000). In distinguishing between the verbal and nonverbal signs or cues of nonverbal communication, the basic characteristics and comparable features of nonverbal signs “cues” can be summarized as follows:

1. Non-verbal messages primarily communicate emotions, and attitudes.
2. Non-verbal cues substitute for, contradict, emphasize or regulate verbal messages.
3. Non-verbal cues are mostly universal and continuous.
4. Non-verbal cues are often ambiguous.
5. Non-verbal cues are more reliable.
6. Non-verbal cues are culture-bound.
7. Non-verbal cues are conventional.

This approach through which the sign is founded on insights from three frameworks: semantic frames (Fillmore, 1980; Lakoff, 1980), cultural anthropology (Hofstede, 1980; Katan, 1999), and the theory of reconceptualization emergence (Lewandowska-Tomaszczyk, 2010; Ba-awaidhn, 2020). Specifically, the focus has been deliberately placed on the discussion about how viewers from unrelated cultures can receive graphic symbols and meaning of their referents.

Since the process of understanding a graphic symbol and detecting its referential meaning requires an interdisciplinary approach and proper theoretical framework is necessary to make the explicit phenomenon.

3. Cultural conceptualization via graphic symbols

The notion of frame and framing has been used in a range of scientific fields, including; classic sociological studies (Goffman, 1967), artificial intelligence (Minsky, 1975), and semantics (Fillmore, 1985). The basic elements of graphic signs can be taken as semantic structures to form the target referential meaning. In this view, graphic sign's elements evoke conceptual structures, and thought to form the target inferential meaning (Lakoff & Johnson, 1980). Consider elements that can evoke the referential meaning in the following prohibitory symbolic figures. Figure 1 'no smoking' consists of 'red across' + 'cigarette', while in Figure 2 we see several referential elements: 'trunk' + 'tusks' + 'big toes' + 'big ears' + 'thick skin' are related to the categorization of animals making us imagine an elephant.

Figure 1 No smoking

Figure 2 No elephants

As such, this generative quality of semiotic system enables it to represent abstract concepts that cannot be adequately represented in the pictures (pictographs). In this study, symbols that consist of elements that are common are called universal symbols as in Figure 1. Symbols that consist of more than two elements are called compound symbols as fig. 2. Thus, component of the sign framing are seen to play a crucial role in recognizing the referential meaning. In this regard, Lakoff says, in his seminal book *Don't Think of an Elephant*!, "framing . . . is not just language. The ideas are primary—and the language carries those ideas, evokes those ideas" (2004, p. 4). In Lakoff's view, frames are mental structures that shape the way we see the world. In other words, when we see a sign[1], its frame (or collection of frames) is activated in our brain, it is "a mode of thought, a mode of action, and a sign of character" (Lakoff, 2008, p. 146) In this sense, I would suggest that a graphic symbol is a form (or an object) that has conceptual semantic structures associated with the intended meaning. There are often associations between the symbols and the meaning of their referents.

4. Cultural conceptualization in graphic symbols

In many cases, cultural specificity may affect the symbol's recognition of people from other cultures. However, Polish and Hadhrami societies display a variety of graphic symbols based on cultural underpinnings. In our everyday lives, culturally-based symbols serve as a way to convey moral values, behaviors, and social acts. According to this argument, graphic symbols are based on culture, humanity, morality, and religion. In Poland, e.g., the value of respect and priority for old people and kids to have a seat in buses and trains is reflected in Figures 3 and 4.

Figure 3 Priority for old people

Figure 4 Priority for kids

These symbols may be misunderstood by viewers from different cultures simply because the people's cultural model stored in minds affect their behaviors, acts, and decision-making (Hofstede, 1999; Katan, 1999). So, the realization of the composite meaning of symbols primarily depends on the viewers' ability to integrate the visual sign with its meaning, in other words, it depends on integrating the symbol components – semantic frames with the meaning of their referents. However, the concept of signs and semantic frames is associated with the phenomenon of nonverbal communication to which people often recycle the frames and compositional messages of signs in their everyday behavior. There is some limited evidence that some graphic symbols may understood differently by viewers from other cultures, have not the same meaning across cultures, while verbal communication systems share the same universal recognizability (Andersen, 1999). Some symbols cannot be decoded unless viewers have cultural background of the target referents. To give one more example, in Hadhrami Arabic culture, you have to take off your shoes before entering the mosques or even rooms in the house, as written in the following Arabic statement.

(5). Arabic transliteration: *lā tadẖul bi-āl-hiḏā*[1]
English verbal: Don't enter in shoes.

[1] International sounds orthography (ISO) proposed by Maciej Klimiuk (2013) was adopted in this study as transcription to solve the orthographic difficulties in reading the Arabic examples.

This instruction effectively targets people through the visual sign presented below. As can be seen, the symbol consists 'shoes', with a 'red circle' crossed by a "red bar." All these components are semantic frames that evoke the sign's message associated with the concept of "removing shoes" before the entrance. This instruction is communicated effectively by using semantic frames as components comprise the following symbol.

Figure 5 Target referent: Don't enter with shoes/ remove shoes

More specifically, what happens when we look at symbols is that the components "semantic frames" are conceptualized and re-conceptualized to thoughts. These thoughts are seen to work effectively in recognizing the symbols and the meaning of their referents that manifest as feedback and recognizable acts in our social practice and behavior.

Culture plays a crucial role in graphic symbol recognition, assisting us to decode the referential meaning of the symbol itself. For instance, Arab cultural diversity may see differences between one Arab country and another, raising the question of whether the entities that constitute symbolic meaning are the same across Arab countries. Since there are different cultures within the Arab world, it is impossible to generalize the same cultural values and same concepts across Arab cultural diversity (Ba-awaidhan, 2019). However, the tendency to guess the prototypical components of symbols is associated to viewers' cultural specificity and cultural fames stored in the people's minds (Hofstede, 1980). More precisely, graphic symbols that indicate a particular meaning in one culture may have different meanings in another. For instance, the concept of *gender* can be identified by symbols like a triangle and circle. A triangle sign refers to a male and a circle to a female, but due to the difference in cultures the referential meaning of these symbols may conceptualized and understood differently, e.g., according to Hadhrami Arabic culture, the sign of triangle primarily refers to a girl's skirt and physically associated with the woman body. If such a sign is located at the entrance to a WC, it will be understood as a toilet for women. However, in Poland like other European countries, a circle sign refers to women rather than men (see Figure 6). This probably indicates that cultural conceptualization in communication should be taken into consideration, even via nonverbal symbol channels. That being the case, cultural differences and specificity may greatly affect the viewers' comprehension to the graphic symbol and its referents.

Sign	Hadhrami	Polish
△	Mostly refers to female	Refers to male
○	Refers to male	Refers to female

Figure 6 Gender sign conceptualization

It has been argued that the mental process of recognition and interpretation of the visual signs, pictograms, icons, and symbols, is a matter of *conceptualization* and *reconceptualization*. More specifically, frames as entities of the sign semantically evoke a particular thought or idea, characterized by our conceptual system in the brain. Consequently, the thoughts or signs idea can be seen physically as sign-feedback or reaction on our perception manifested in behavior. However, within the framework of a multi-reconceptualization, there are at least three cognitive processes of sign recognition involves the receiving process, the constructing process, and the responding process as illustrated in Figure 7. From a neurological science perspective, it is worth mentioning that the "nonverbal brain" consists of circuits, centers, and modules of the central nervous system which are involved in sending, receiving, and processing speechless signs (Givens, 2013). In other words, such as visual signs, pictograms, and symbols are used as a communication medium.

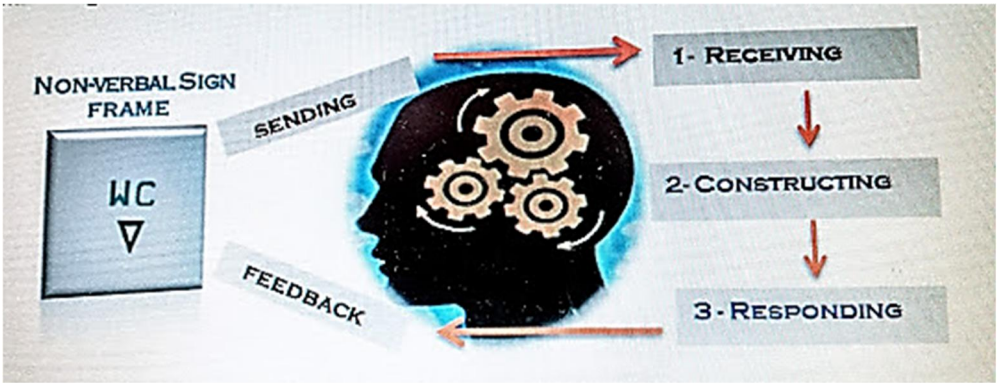

Figure 7 A basic mental processes for understanding a symbol

Generally speaking, a sign, whether verbal or nonverbal is seen to reflect a particular meaning through mental correspondence between the signifier (form), and the concept signified (Saussure, 1930). In this sense, the connection between Ferdinand de Saussure's sign and Charles Peirce's one (1958) is that there is *no meaning without form.* This can be taken as a turning point in

semiotic studies that encouraged it to become an interdisciplinary field based on science and drawing on insights from other branches of knowledge – linguistics, neurology, and cultural anthropology – related to the recognition of language in terms of graphic symbols. As we have seen, a large amount of information and instructions can be communicated via visual signs, pictograms, icons, cues, and symbols which are all widespread in forms of nonverbal communication. For instance, icons are used in social media to raise emotions, similar symbols, and signs are found in the public places of cities to instruct the viewers. In terms of sign and meaning. It appears that we are not only dealing with linguistics influenced by Jakobson's *inter-semiotic interpretation* of a sign, but also other disciplines that are based on the transitive relations like mathematics. In Jakobson's (1971) view, a semiotic system can be a system for communication. That is, the function of the semiotic system is to make the association between a sign and what it stands for. This relation can be simply exemplified in Figure 8.

Figure 8 Red in traffic lights = stop

Consider the relation if,

X		Y
Red	→	Traffic signal
Sign	→	What it stands for.

From a cognitive semiotic viewpoint, the subject matter of semiotics is the relation between X and Y. This relation indicates the association of a sign with what it stands for. Studying and investigating the nature of the X-Y association is the subject matter of semiotics. In the present study, the visual sign/pictogram refers to instructions that are communicated via verbal language in terms of nonverbal channels. In other words, instructions, messages, and ideas can be expressed via visual signs, using forms of X, such as visual signs, pictograms, cues, and colors, as a nonverbal communication channel.

5. Framework for detecting referential meaning

Going back to Lakoff (1998), I would suggest that a graphic symbol is *metaphorically* decoded by schematization, in the sense, that the symbol's components (sematic frames) are not only components comprise symbol but also they activate the sign's semantic entities which evoke symbol's referents in the viewer's mind. These entities are semantic structured *frames* involving mental structures – conscious/unconscious – and categorized by neural circuity in the human brain (Fillmore, 1998). The structures are interpreted or schematized, and mapping from one frame onto another (Lakoff, 1998). The interpretation and comprehension of the visual sign depends on conventions or cultural models which can be seen to constitute a *collective programming* stored in the people's mind (Hofstede, 1984). This suggests that a sign mostly has cultural basis. To achieve a better understanding during intercultural communication discourse, these cultural models should be taken into account to get an approximation by adopting *relevant constraints* (Gutt at al., 2000; Sperber & Wilson, 1986). However, it is argued that the process of decoding the graphic symbol and the meaning of its referents is a multi-process involves *conceptualization* and *reconceptualization* (Lewandowska-Tomaszczyk, 2010). It is based on at least three cognitive processes, that is, schematization, categorization, and conveniality, as illustrated in Figure 9.

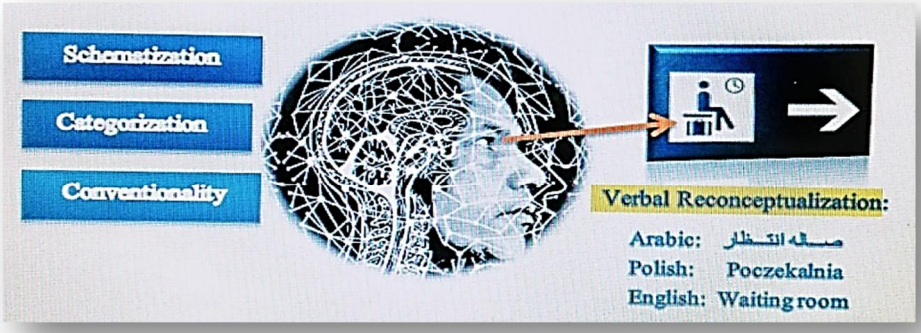

Figure 9 Multimodal cognitive process of decoding a symbolic referent

When we view graphic symbols, what happens is that our minds conceptualize the symbol components and evoke the meaning of their referents. As such, symbol components seen to work effectively in recognizing the symbols and their referents manifested as recognizable acts in our social practice and behavior. However, culture plays a crucial role in symbol recognition, assisting us in decoding the referential meaning of the symbol itself. Graphic symbol shown (Figure

9), is taken from train station in Poland, to indicate where the waiting room is. Anyway, the meaning of such symbols is very obvious, and can easily be guessed in the absence of their referents. These symbols are regarded as transparent(Fuller & Stratton, 1991). For other symbols, the meaning is not obvious, but once the referent is provided, the symbols are seen in instruction symbols, and warning symbols. For instance, Covid-19 posters and pictograms are seen to express hazards, warnings, and risks of spreading Coronavirus disease nationally and universally. Thus, signs of *wearing a mask*, *social distance*, and *washing hands* are seen not only in Hadhramout and Poland, but mostly in societies all over the world. In Poland like many European cities, people in the elevator should keep a distance of 1.5 m, as shown in Figure 10.

Figure 10 Keep the distance of 1.5 m

While the coronavirus posters seen in Arabic Hadhrami society are greatly affected by cultural occasions and conventions such as public gatherings and marriage festivals. For example, instead of a hug or shaking hands of the bridegroom as an expression of greeting inviters waving with one hand keeping distance. This idea is expressed in the poster in Figure 11 that has been seen at the entrance of the bridegroom house.

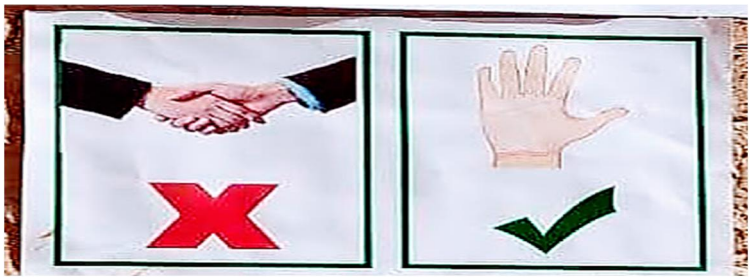

Figure 11 Waving a hand instead of shaking hands

However, the cultural-semiotic analysis of the visual signs in this study is based on the premise that human cultures are Weberian images (Geertz, 1973). In Geertz's view, *webs of significanc*e spun by humans in their communicative

acts, humans interact with each other, and with their worlds through dynamic *trafficking* in signs. In this regard, and seeking to illuminate factors that influence understanding the relationship between signs and their referents, we assume some hypotheses in the next section.

6. Assumption

Relying on the previous theoretical framework and seeking to formulate study hypothesis, the author considered the following points:

- A graphic symbol is a physical form.
- A symbol comprises components having conceptual structures and thoughts evoke referents in our perceptions.
- Viewers from different cultures make sense to unique feature of referents that match cultural frames stored in their minds.
- Realizing the components of symbols is based on several cognitive processes: schematization, categorization, and conventionality.

To sum up the discussion and based on the points above, the author assumed the following hypothesis: Understanding the symbols and the meaning of their referents for viewers from unrelated cultures, Hadhramout-Yemen and Poland, is affected by uniqueness of referent, cultural specificity, and prototypicality.

According to this study, schematization relates to conceptualizing the unique feature(s) that determine referents and components that viewers guess, conventionality relates to the cultural specificity and interpretive references of components, and categorization relates to the component prototypicality among other referents. Prototypicality was originally investigated in categories such as 'bird' and 'furniture' (Rosch, 1978). Members of these categories were graded on a continuum of category representativeness, or how a good exemplar they were of their categories. For example, as can be seen from Figure 2, the prototypical components 'trunk' + 'tusks' + 'big toes' + 'big ears' + 'thick skin' evoke in our perception the image and the meaning of an elephant rather than any other animal in the category. A symbol that consists multipole components is called a *compound symbol*. However, the graphic symbols are used to convey information, instructions, regularities, warnings, and cultural values, understanding them mainly depends on the decoding their referents. This cognitive process is based on a nonverbal sensitivity that is used in many other disciplines (Rosenthal, 1979). For Rosenthal (1979), *nonverbal sensitivity* defined as the ability to take an encoded sign and interpret its meanings accurately in line with what the sender intended. Encoding is an act of generating information through symbolic frames that evoke sense and meaning to their referents, and the impact of which is seen in social behavior and practice socially, For example, with a compound graphic symbol that

involves multiple frames, its meaning and interpretation depend on the realization of elements comprising the compositional meaning. Thus, the communicative message can be sent via visual signs when the inter-semiotic system works as a system for communication. Therefore, to understand the symbols and their referent, it is not only necessary to interpret the semiotic layers of the sign as proposed by Szczerbowski (2005), but also to illuminate the factors that affect understanding the symbols and their referents across different cultures.

7. Methodology and procedures

Based on this research question, how can viewers of other cultures understand symbols, and what factors may influence their understanding and recognition of symbols and their referents? Methods and procedures have been conducted to answer the question.

7.1. Participants

The total number was 40 undergraduate students who participated. 20 Hadhrami students from Seiyun University in Hadhramout-Yemen, and 20 Polish students from the University of Lodz, Poland. In the first group were 16 females and 4 males related to Arab culture and identified as Hadhramians, who speak Arabic. The second group consisted of 4 females and 16 males related to Polish culture in Europe. Students had different cultural backgrounds, and their age range was 18 to 35 while their education was 36 participants had a bachelor's degree, 4 participants had a master's degree. The symbol representativeness and the cultural background of the participants were assessed among both groups; the Hadhrami group and the Polish group.

7.2. Methods

The total number of graphic symbols was 30, used in Hadhramout-Yemen and Poland for communicative purposes. According to their functions, the symbols were classified into three categories, As can be seen, 1-10 warnings/risks symbols, 11-20cultural-based symbols, and 21-30 instruction symbols, as shown in Figure 12.

The meaning of these symbols is regarded as guessable, yet some of them maybe not obviously understood by viewers from other cultures. Based on the research question, how do students understand the three categories of symbols, and what factors influence the understanding of the graphic symbols and their referents to viewers belonging to unrelated cultures? Methods and procedures have been conducted to answer the questions. Methodology was designed to analyze and evaluate

the participants' feedback in two stages. The aim of the first was to check how students understand the different types of symbols that comprise the data, while the aim of the second stage was to focus on what factors influence understanding the symbols and the composite meaning of their referents.

Figure 12 Graphic symbols used in Hardhrami-Arabic and Polish societies

7.3. Data analysis

To compare how participants understand the symbols and guess their referents, students were presented with the three types of symbols: warning symbols, cultural-based symbols, and instruction symbols. They were not informed of the meaning of each symbol. Participants were asked to guess the target referents of representativeness of each symbol in the absence of its target phrase.

7.4. Results

As can be seen, each one of the symbols was assigned a degree based on the participants' rating. Participants' highest response was (20), which converted into a percentage. As well, the maximum number of participants who correctly identified the target referent was 20, referring to subjects who were able to guess the meaning of the target referent for each symbol (the number of students of each group was 20).

Results for both groups can be compared and contrasted in the following detailed findings. However, the results of participants' reactions we obtained show subtle variations in the way students in both groups realize and perceive graphic symbols and the meaning of their referents. First, the analysis of students'

feedback to the category of symbols namely warning/risks symbols showed that Polish students scored a higher degree of guessability more than the Hadhrami group, as shown in Table 1.

Table 1 Warning symbols

No	(1) Warning symbols Target referents	Hadhrami Group (*n* = 20)		Polish Group (*n* = 20)	
		Response %	Score *	Response %	Score*
1	Danger	75	15	90	18
2	Camels not allowed	90	18	55	11
3	Radiation	71	14	99	19
4	No smoking	95	19	100	20
5	Don't smoke hookah	95	19	85	17
6	Don't swim in here	92	18	100	20
7	No alcohol for pregnant	20	4	96	19
8	Don't feed birds	75	15	97	19
9	Don't enter with shoes	90	18	70	14
10	Keep medicine out of reach children	90	18	99	20

The second category consists of cultural-based symbols. Based on the results of this category, we found that Hadhrami students scored higher component guessability and the degree of realizing the symbols and their referents. Analysis of the participants' feedback revealed that the Hadhrami group showed more ability to understand culture-based symbols and meanings of their referents, compared with the Polish group, as shown in Table 2.

Table 2 Cultural symbols

No	(2) Cultural symbols Target referents	Hadhrami Group (*n* = 20)		Polish Group (*n* = 20	
		Response %	Score *	Response %	Score*
1	Church	95	19	99	20
2	Mosque	100	20	85	17
3	Seats for old people	85	17	100	20
4	Blood donation	90	18	90	18
5	Seats for people with kids	81	16	99	20
6	First Aid kit	98	18	98	19
7	Disability	90	18	90	18
8	Help old people	97	19	85	17
9	No shaking hands	99	20	60	12
10	Greeting with waving hands	98	19	75	15

The third category was symbols that convey instructions and regularities. Our analysis of this category revealed that Polish students pay much concern to symbols. Based on their responses, they scored higher on guessability and referential

meaning of regularities and instruction symbols than subjects in Yemen- Hadhramout, as shown in Table 3.

Table 3 Instruction symbols

No	(3) Instruction symbols Target referents	Hadhrami Group (*n* = 20)		Polish Group (*n* = 20	
		Response %	Score *	Response %	Score*
1	Waiting room	78	15	98	19
2	Social distance	82	17	90	18
3	Toilet for men	20	4	89	18
4	Covid-19 vaccines	65	13	85	17
5	Don't touch hot surface	75	15	92	18
6	Wireless coverage	73	14	90	18
7	Work in the road	90	18	98	19
8	Stop	98	19	99	20
9	Go	96	19	100	20
10	Use the mask	70	14	98	19

7.5. Factors affecting understandability

In order to check up how viewers from different cultures may understand symbols and what factors may influence their understandability, two methods were conducted. First, five symbols that are originally used in Hadhrami culture were presented to the Polish group. Second, the other five symbols originally used in Polish culture were presented to the Hadhrami group as well. The results of groups were analyzed and evaluated according to three values: cultural specificity, component prototypicality, and guessability of target referents. The three values were presented in tables 4 and 5. Cultural specificity points were counted when participants correctly interpreted the target referent from another culture. The prototypicality points were calculated when each component of the symbol composite meaning is presented as a prototypical member of its category (Max.5.points). Guessability points were counted when the participant guessed the target referent of the symbol correctly. However, Hadhrami students were presented with symbols that appeared in Polish culture, and asked to describe symbols and guess the meaning of their referents. Results showed subtle variation in the participant's responses and the three values as shown in Table 4.

As can be observed above, the results were good to some extent, yet the degree of participants' responses was different. However, the higher response score was 87% symbol.2 while symbol 2. scored 85%. This refers to the range of semantic agreement between the composite meaning of symbol components and their referents. Symbol 5 consists of 'person' + 'handbag' + 'wall clock' which means 'waiting room.' Thus, component prototypicality seems to be the principle that enables viewers to guess the target referents among other possible referents.

Anyway, the agreement between the symbol and its target referent may be affected by cultural specificity and cultural diversity. For example, symbol 3 scored 16% as the lowest degree of response in the Hadhrami group. This symbol consists of 'woman' + 'cup' + 'red line' which means 'no alcohol for pregnant.' The target referent of this symbol may be accessible for Polish people like other European countries. But for Hadhrami students who signified as Arabic culture, the referential meaning will be non-accessible or remain ambiguous.

Table 4 Means: cultural specificity, prototypicality, and guessability on Polish symbols

No	Symbols from Polish Culture	Rating Hadhrami Participants to Polish symbols			
		Participant's responses %	Cultural specificity out of 20 points	Prototypicality out of 5 points	Guessability out of 20 points
1		75	15	3	18
2		87	18	3	18
3		16	16	4	17
4		32	14	2	11
5		85	12	3	17

Regarding the Polish group, the same procedures were conducted, but the symbols were from Hadhrami-Arabic culture. The Polish students were asked to guess the meaning of Hadhrami symbols and their referents. Results were obtained reveal alternatively different but in general, as shown in Table 5.

Although these symbols appear in Hadhrami-Arabic culture, the Polish student could recognize the meaning of their referents. This was evident in the different degrees of participants' responses. The highest degree was 80% for 'mosque' as a target referent of the second symbol, while 'don't smoke hookah' was the third symbol scored 75%. However, the degree of understandability refers to the rating agreement between the composite meaning and the components that comprise the symbol, but the results also revealed that unique features of the referents influence understanding the composite meaning. For example, a hump is a distinctive feature of the camel that shown in the symbol above, which is associated with Arab culture rather than Polish culture, yet the Polish students scored 65%, and easily guessed that 'animal' + 'hump' represent camel rather than any other item in the

animal categorization. However, there was subtle variation in the thematic interpretation of this symbol with the diagonal redline among the Polish students. There were various interpretations: 60% of students (12 out of 20) interpreted the diagonal redline as "no enter camels/camels not allowed," 25% of students thought this redline meant "stop killing camels," and only 15% thought it meant 'no hunting camels'. This variation in thematic interpretations of symbol components is, as it has shown in the study, mainly due to differences in Hadhrami-Arabic and Polish cultures.

Table 5 Means: cultural specificity, prototypicality, and guessability on Hadhrami symbols

No	Symbols from Hadhrami Culture	Rating Polish Participants to Hadhrami symbols			
		Participant's responses %	Cultural specificity out of 20 points	Prototypicality out of 5 points	Guessability out of 20 points
1		65	18	3	16
2		81	19	4	17
3		75	18	3	15
4		53	19	2	15
5		70	18	2	16

7.5. Discussion

Results obtained in tables 4 and 5 seem to support our theoretical assumption that the understandability of referential meaning of symbols is influenced by the uniqueness of referent, the cultural specificity, and component prototypicality. Symbol (2 in table 4) refers to the church. Although this symbol is common in Poland more than in Hadhramout, it was scored 80% as an understanding degree of its target referent by Hadhrami-Arabic students. Simply, because 'across' is the distinctive feature of the church; hence we assume that people from different cultures easily guess that components; 'across + 'building' represent the church. Similarly, with the 'crescent' that can be seen in symbol (2 in table 5), it is a distinctive feature of the mosque. This symbol was scored 81% by Polish students who easily guessed the symbol referent by the *unique feature* 'crescent' of the target referent.

Regardless of the variation among participants, there is a relative relationship between the value of prototypicality and the degree of understandability. The quality of prototypicality seems to increase the level of participants' responses in

all types of symbols shown in tables: 1, 2, 3, 4, and 5. Prototypicality of referent plays a role when the composite meaning of symbol components encompasses several referents. We found in this case, the referent that is most symbol's prototypical component (a good example of its category) is being guessed. For example, the symbol (3) shown in table 2, its components are 'seat' + 'old man,' which means 'old man's seat' represent several people, like 'old woman', and „disabled person", etc. In this sense, the 'old man' is assumed to be the most prototypical person (representative) of the old people category (Rosch, 1978).

However, the tendency to guess the prototypical components of symbols is associated with viewers' cultural specificity and cultural models stored in their minds (Hofstede, 1980: Katan, 1999). Cultural specificity plays a crucial role in students' guessabilty of the referential meaning of some symbols. Characterizing symbols is closely related to the culture as well. Differences in culture may affect the understanding of symbols and their referents. For instance, the 'triangle' and 'circle' refer to gender; a triangle represents male, and a circle represents female. These symbols appear in the WC entrance. However, viewers from different cultural perspectives might observe them differently. The symbol (3 in Table 3) gave a piece of evidence that supports this claim. It consists of 'wc' + 'triangle' as components which means 'toilet for men.' Based on the results we obtained (in Table 3), this symbol was interpreted differently among students. Comparatively, the target referent correctly interpreted and scored 89% of the Polish students' responses, while this target referent scored only 32% of the Hadhrami students' responses. The Hadhrami students were confused about the correct target referent that meant to them 'toilet for women' rather than 'toilet for men.' According to most of the Hadhrami students, the target refers to 'toilet for women.' Simply because according to Arab culture trend in this context, the theme of the triangle sign primarily refers to a skirt physically associated with the woman's body. In Poland, as with most of Europe, a circle signifies women, whereas a triangle signifies men. As such, the meaning of symbols and the referents are also affected by *cultural specificity* in terms of the thematic interpretation that roles as the functions that arguments fulfill, involving agent, recipient, and location (Fillmore, 1968).

8. Conclusion

This study showed that the two groups of undergraduate students from Seiyun University, Hadhramout-Yemen, and the University of Lodz, Poland, guessed the meaning of graphic symbols and their referents differently according to the accurate meaning of symbols and their referents. Polish students showed great ability in understanding the meaning of warning and risks symbols appeared in

both cultures; Arabic and Polish cultures. Whereas Hadhrami students understood the cultural-based symbols more than the Polish group. On the other hand, the Polish students revealed a higher degree of understanding instruction and regularities symbols used in both societies. However, the higher understanding of the Polish participants to symbols that convey warnings, risks, instructions, and rules may be ascribed, according to Hofstede (1984), to the high level of uncertainty avoidance that conforms to the cultural and conservative society. For Hadhrami students, it is worth mentioning that Hadhrami fathers and grandfathers who moved to Asia, Africa, and Europe provided their families, children, and siblings with knowledge of cultural diversity and education in Hadhramout. That may be a piece of evidence for why Hadhrami students scored highly understanding of cultural-based symbols.

According to this study, the concept uniqueness of referent occurs when symbol components include a distinctive feature of the referent, and the symbol understanding the symbols and their referents based on the conceptual relationship between the meaning of the target referent and the composite meaning of symbol components. This is what is usually referred to as symbol iconicity. Published studies have primarily measured symbol iconicity through their transparency and translucency (Lloyd & Fuller, 1990). Symbol transparency refers to the degree to which viewers can directly understand the referent or meaning represented by an individual graphic symbol. However, analyzing the correct feedback of students across different cultures, we found that there was correlation between component prototypicality and the degree of gussability to the target referent of different symbols from one side, and between correct understandability of participants with the unique features of the symbol target referents from another side. This seems to support our theoretical assumption that understanding the symbols and meaning of their referents for viewers from unrelated cultures Hadhramout-Yemen and Poland is affected by the uniqueness of referent, cultural specificity, and prototypicality. We do not claim that these are the major factors that influence graphic symbol understandability. Probably, there are other factors related to sign presentation, and component ambiguity need to be discussed. Moreover, since graphic symbols are used as a communication medium to inform knowledge and include compound signs, it is suggested that their referents and semantic frames should be much investigated from a cognitive science perspective.

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APPENDIX A

Feedback of participants to symbols and their referents

No	Target symbol	Hadhrami Score %	Polish Score %	No	Target symbol	Hadhrami Score %	Polish Score %
1	Danger	75	90	16	First Aid kit	98	99
2	Camels not allowed	90	55	17	Disability	56	98
3	Keep medicine out of children	80	90	18	Help old people	60	89
4	No alcohol for pregnant	15	98	19	Greeting with waving hands	98	52
5	Don't smoke hookah	99	74	20	No shaking hands	98	45
6	Don't swim	91	20	21	Waiting room	75	98
7	No smoking	97	20	22	Social distance	80	98
8	Don't feed birds	72	97	23	Toilet for men	10	99
9	Don't enter with shoes	90	70	24	Covid-19 vaccines	64	81
10	Radiation	67	89	25	Use the mask	70	98
11	Church	88	99	26	Wireless coverage	73	87
12	Mosque	99	78	27	Work in the road	90	98
13	Seats for old people	82	99	28	Stop	98	100
14	Blood donation	70	96	29	Go	97	100
15	Seats for people with kids	81	99	30	Don't touch hot surfaces..	70	92