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Refugee Spatial Awareness: Evidence from Za'atari

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Abstract

This research considers the relationship between spatial cognition and situation awareness, or "spatial awareness" in a refugee camp. Specifically, we present some of the first research on spatial awareness using empirical data collected in the Za'atari Syrian refugee camp in Jordan. Results showed clear spatial awareness differences between male and female in terms of camp infrastructure completeness. This result is likely based on the underlying cultural dynamics of the refugee population. We outline areas for future refugee spatial awareness research such as community asset mapping. A better understanding of how refugees maintain spatial awareness in camp settings can inform GIScience research aimed at (a) identifying new methodologies and educational pathways for supporting spatial awareness in long-term displacement situations, (b) refugee camp design, and (c) space/time representations to ultimately improve the lives of people that are forced to leave their homes and countries due to natural disasters or armed conflicts.

1. Introduction

Forced displacement, whether by natural disasters or armed conflict, is a growing global problem. It raises important challenges for maintaining understanding of the spatial, temporal and thematic aspects of one's circumstances, or spatial awareness (SA). Being forced to leave one's region (such as a town or village) as well as immediate environment (neighbourhood, home), forces the displaced to obtain spatial awareness within new environments.

In this paper, we begin to examine camp-scale spatial awareness for refugees. By "camp-scale", we mean the spatial extent of a settlement specifically built to support survivors of a natural disaster or armed conflict (or both). We present some of the first empirical research on refugee spatial awareness via mental mapping evidence obtained in the Za'atari Syrian refugee camp of Jordan - one of the world's largest refugee camps, hosting an estimated 79, 900 persons of concern who are survivors of the Syrian civil war and where SA a recurring problem [1] (Figure 1).

Figure 1. Location of Za'atai Syrian Refugee Camp in Jordan.

2. Theoretical Framework - Spatial Awareness: Situation Awareness and Spatial Cognition

We use the term spatial awareness (SA) to describe the intersection of situation awareness and spatial cognition. Situation awareness has been defined as "the perception of elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future " [2:36]. Situation awareness is a dynamic concept, changing as situations evolve over time and new circumstances occur. Spatial cognition is the idea of how humans think about the world around us and our interactions with the environment [3]. For the research reported here, SA was used to explain and interpret refugee perceptions of their environment within a space/time context.

3. Methods

We utilized a mental mapping exercise (MME) to establish baseline evidence to investigate refugee spatial awareness. Mental maps are a well-established method for collecting data about SA. Participants were given a pen and blank pieces of paper. After a brief explanation of the idea of a mental map in both English and Arabic, they were then asked to draw the "map in their head" or when they think about Za'atari as a place, what that would look like. Participants were not shown an existing mental map to prevent bias when creating their own mental maps.

Thirty five mental maps were generated. Nine respondents listed their gender as female, seventeen listed their gender as male, and the remaining thirteen listing no gender. Twenty map feature categories ranging from general criteria such as number of building to specific criteria such identification of specific buildings on the mental maps such as United Nations High Commission for Refugees (UNHCR) were initially established by the lead author who had visited the camp on two occasions and was familiar with the camp context. Thematic codes were developed to interpret the mental maps based on (a) the aforementioned initial criteria and (b) existing mental map literature [4]. SA thematic codes related to camp infrastructure completeness such as details about roads, buildings and camp administrative areas known as sectors are reported here. Each mental map was then independently reviewed by two annotators who assigned the mental maps into the thematic codes by recording frequency counts of specific mental map features found on the mental maps.

4. Results

Table 1 shows baseline total results of camp infrastructure completeness.

Table 1. Camp infrastructure completeness totals.

Counts	Number of Streets	Number of Buildings	Number of Districts
Female (n=9)	26	13	0
Male (n=17)	66	383	67
Total (n=26)	**92**	**396**	**67**

Mental map results related to camp infrastructure completeness showed clear differences between males and females. Males showed more detailed views of the camp when compared with females. For examples, on average, males showed five streets compared with three streets for females. It was informally communicated to the lead author by a camp staff member during a field visit to Za'atari that the traditional Islamic culture of many of the Syrian refugees living in the camp restricts the movements of females. The distinctions become greater when looking at the number of buildings that were identified where on average, males would depict fourteen buildings compared with seven buildings for females.

Figure 2 shows a proto-typical example of mental map created by a female that visually demonstrates these points. What makes this mental map proto-typical of female maps is the limited number of places (four) shown. We further examined female mental mapping during a field exercise where a young women was given a GPS and asked to map her daily life at the camp. The map produced during this field exercise was almost identical the mental maps in terms of a limited number of features (four) within a relatively small, bounded area (Figure 3).
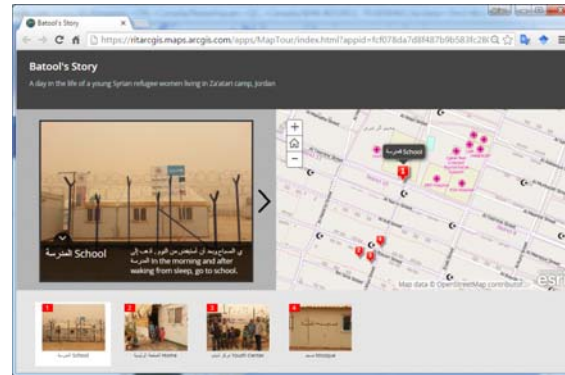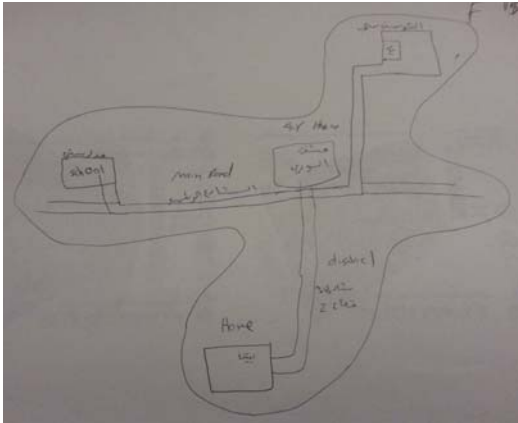
Figure 2. Prototypical female metal map.

Figure 3. Story map of a young Syrian refugee women.

Perhaps the most striking contrast with camp infrastructure completeness by gender were the numbers of camp districts (an administrative unit) shown on the maps. In this case, males, on average, identified three districts where females identified zero districts. For example, mental maps created by males show often showed a top down view of the entire camp (Figure 4). Mental maps drawn by males are very reflective of the UNHCR map given to refugees when they first arrive in Za'atari (Figure 5).


Figure 4. Proto-typical mental map drawn by a 23 year old male refugee. Numbers show the various districts within the camp.

Figure 5. UNHCR Map given to refugees when they first arrive in the camp.

5. Future Work, Summary and Conclusions

Mental map results clearly indicated differences in gender in terms of camp infrastructure completeness. This result is likely based on the underlying cultural dynamics of the refugee population.   One area for future work on refugee spatial awareness would be refugee community asset mapping or how the refugees utilize and think about refugee camp space for daily living and problem solving. For example, Figure 6 is a community asset map made by a male Za'atari refuge who was given a GPS device and mapped spatial community assets or what he considered his 'safe zone' (i.e., the immediate area where he lives) and his 'neighborhood' (i.e., his closest people).
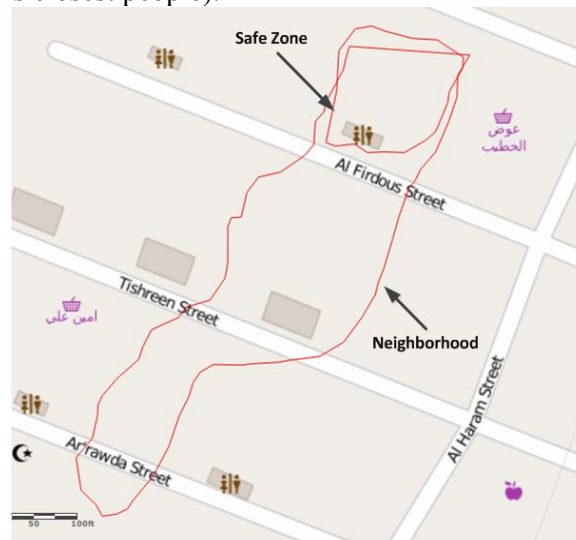
Figure 6. Community asset mapping of refugee safe zones and neighborhoods.

Understanding refugee SA has potential for identifying new methodologies and educational pathways for supporting SA in long-term displacement situations [5]. Furthermore, a better understanding of refugees SA in camp settings can inform research on refugee camp design [6], and ultimately lead to improvement of the lives of displaced people.

Acknowledgements

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