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IMAGE OF THE CITY: PRIORITISING THE ELEMENTS IN HISTORIC AND NEW URBAN SETTLEMENETS OF CAIRO, EGYPT

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ABSTRACT

"Image of the city" is a commonly used term that structures people's perception of the spatial organisation and visual form of cities. In the nineteen-fifties, Lynch developed a model of five objective elements that collectively shape people's perception to the image of cities, which is still widely acknowledged in recent research. The main concluded elements are paths, edges, districts, nodes and landmarks. The image of a city is dynamic and ever-changing. The present study investigates the way people prioritise the role of these five elements in shaping the mental images of old and new urban settlement in Cairo, Egypt. After setting the theoretical framework, the study employs a survey that involved 74 participants, to investigate their perception of the elements that characterise the image of 'Historic Cairo' and 'New Cairo'. The outcome of the survey is quantitatively analysed by [2]descriptive analyses, cross tabulations and analyses of variance, to identify the most influential elements in both contexts, and their relations to the studied sample. Landmarks were most influential upon people's perception to the image in both contexts. Edges were the least important in 'Historic Cairo', while nodes were the least in 'New Cairo'. This should help local architects, urban designers and city planners to develop the built environment in a way that better responds to people's priorities.

KEYWORDS: Image of the city; Paths; Edges; Districts; Nodes; Landmarks; Cairo – Egypt.

1. INTRODUCTION

Kevin Lynch is one of the twentieth century key-figures in environmental design and behavioural studies, particularly as applied to the field of urban design and city planning [1]. In the nineteen-fifties, he developed extended studies about central areas in Los Angeles, Boston and Jersey City, USA. These studies aimed at understanding the way people perceive the image of cities, and what may promote cities' imageability.

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He concluded that environmental images link people to places, and give them a sense of identity and emotional security. The outcome of his studies was primarily manifested in five objective elements that formulate a city's image, as explained in detail under the subsequent section '3. The Model' hereunder.

This model gains extended recognition for that it addresses the image of the city as a combination between objective elements in the city and the individual perception of its residents. It suggests that a well-designed city image can improve the sense of identity and security, as well as helping easier navigation around the urban landscape of the cities [2, 3].

Although Lynch's model was developed more than fifty years ago, it remains highly credible to the extent that a large number of recent research papers, books and academic theses build on it, covering a wide spectrum of specialties like environment and behaviour, cognitive psychology, urban design, tourism development, computer applications, cinematography, and many more.

It is interesting that the Journal of the American Planning Association is dedicating its entire autumn 2018 issue to "Envisioning City Design: The Legacy of Kevin Lynch" [4].

Some researchers studied Lynch's theory itself, its origins, validity and possible means of development. For example, Sidanin's paper has undertaken extended analyses to the Lynchian and post-Lynchian theories in urban design [5]. While Ashmore concluded that Lynch's approach and methodology are valid for application in New Urbanist environments [6]. Yet, Damayanti has developed an extension to Lynch's theory by introducing social interpretations to his five elements [3].

On another hand, some studies applied Lynch's model to different case studies around the world, e.g. India, Korea, Malysia, UK and many others [7 - 10].

Nevertheless, other scholars have examined the application of Lynch's model to different disciplines. For example, Quercia and his partners took Lynch's work to examine the reflections of city image upon mental health [11]. In a different sense, Nasar also built on the work of Kevin Lynch to explore the role of human evaluations to cityscape upon creating more pleasant cities to the residents [12]. Where Topcu's

study addressed the visual representation of mental images in urban design, following Lynch's work [13]. At a methodological and conceptual level, Pearce and Fagence outlined the potential contribution of Lynch's model in tourism development [14].

When it comes to arts, Raynsford explored the origins of Lynch's model from the perspective of civic arts [15]. Likewise, in filmmaking and cinematography, Liu analysed the characteristics of Chinese films and TV plays using Lynch's model [16].

In terms of technology and computer applications, Al-Ghamdi and Al-Harigi used Lynch's model to track the impact of technology on the observer and the observed within contemporary cities [17]. More interestingly, Jiang has developed a process by which the image of the city can be quantitatively derived automatically using computer technology and its geo-spatial databases [18]. Seitinger used Lynch's model to explore the possible impact of using programmable and responsive LED-based lighting and displays upon social communication and urban aesthetics [19].

By all means, this is not meant to be a comprehensive review of the literature about Lynch's work. It is rather a brief journey around some recent and interesting pieces of work in diverse disciplines to confirm that Lynch's model is being widely used until present time, and can therefore be adopted in the present study.

However, due to the nature of today's cities, people's perception of their city images can be depicted as a dynamic ever-evolving process. Nowadays cities keep transforming and changing in a complex fashion, to accommodate the changes in functions and meanings, as well as the poetic and symbolic imagery Lynch highlighted [2, 6, 20, 21].

2. METHODOLOGY

The present study is meant to explore empirically how people prioritise the elements of city image in historic and modern urban settlements – as applied to Cairo, Egypt. It builds on the five elements outlined by Lynch and subsequent studies; namely paths, edges, districts, nodes and landmarks [2]. After introducing the model in-study briefly, the empirical part starts by explaining the process of questionnaire design, sampling, pilot testing, means of communication and methods for quantitative

analyses. This includes descriptive statistics “frequencies”, cross tabulations and analyses of variance – ANOVA. The outcome of the survey analyses is then discussed in the light of preceding literature to learn about the most influential elements that shape people’s perception to the image of Cairo in both contexts, and with reference to different participant groups.

3. THE MODEL

Lynch has developed a profound approach to analyse and improve the visual forms of cities. He describes the city as an interrelated connection of paths, edges, districts, nodes and landmarks. He defines paths as continuous, identifiable and directional elements with clear starting and ending points, like streets, sidewalks, trails and other channels in which people may travel. On the other hand, edges are continuous visible boundaries that separate two districts, and may be exemplified in by highways, rivers or lines along which two regions are joined together. The same model defines districts as fairly large sections of a city, which share a common identity or character. Where nodes are strategic focal points that people may pass through, like squares, piazza and junctions. They should not necessarily be defined by a strict physical form but may sometimes be represented by concentrations of some use, as a street-corner hangout. At last, landmarks are unique characteristic reference points, such as buildings, signs, stores that are memorable in the urban context [2]. The forthcoming analyses will build on the same definitions.

4. SCOPE OF THE STUDY

The study is based on exploring how people prioritise the elements of city image in historic and modern urban settlements in Cairo, Egypt. Therefore, it was decided to set ‘Historic Cairo’ and ‘New Cairo’ as two main foci for the present study.

Due to its significance, ‘Historic Cairo’ is defined in detail by Law 119/2008. Its northern boundaries are Ramsis square, Kamel Sedki street, El-Khalig El-Masri street, Azab Pasha street, El-Dhaher square, Tour Sinai street, Port Said street, El-

Gaish square, El-Halabi square, El-Mansouria street, Salah Salem road, El-Ferdous square, Prince Gergamash street, Nasr Abu El-Farag street and the Autostrad [22].

The same source defines the eastern boundaries as the Autostrad, El-Mokattam mound, Hassan Hamada street, Sidi Abu Rommana street, El-Khala street and the Autostrad again. While the southern boarders started with the Autostrad, then Abu El-Hagr street, El-Ghafari street until El-Fustat and Nile Cornish.

At last, the west of Historic Cairo is bound by Nile Cornish, Salah Salem road, Magra El-Oyoun, Fom El-Khalig, El-Sadd El-Barrani street, Youssef El-Sebaie street, El-Nassereya street, Abdeen street, Hassan Akbar street, Dar El-Ketab street, Mohamed Ali street, Attaba square, El-Ruwai'e street, Clout Bek street and Ramsis square [22]. The overall area of 'Historic Cairo' was reported to be around 32,000 km^2 [23]. This is shown in Fig. 1 hereunder.

On the other hand, 'New Cairo' was founded in accordance with the Presidential Decree number 191/2000. It extended over an area of 70,000 acres to the east of Cairo and was meant to encompass several residential districts. It is bound by the Ring Road to the west, Cairo/Suez road to the north and El-Kattameya/El-Ain El-Sokhna road to the south and east [24]. Figure 2 shows a map of 'New Cairo' as described below.

Fig. 1. 'Historic Cairo' map [23].

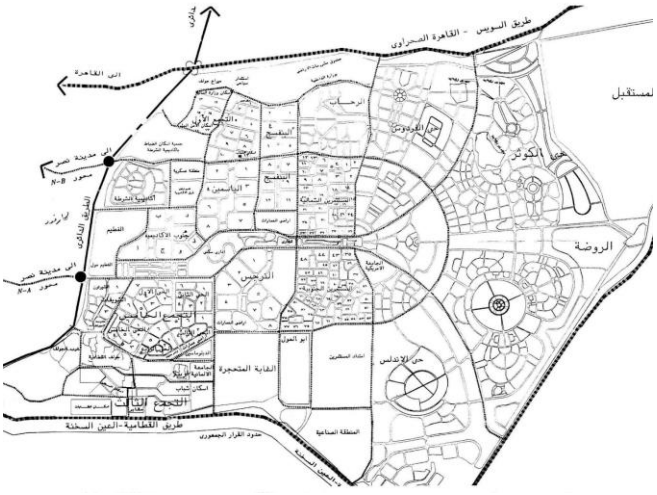

Fig. 2. 'New Cairo' map [24].

5. QUESTOINNAIRE DESIGN

Questionnaires are widely accepted for collecting comparable data from particular populations [25].

The present questionnaire is designed in three main sections, following a brief introduction to the survey, its objectives and privacy policy. Section I was meant with personal information. Writing the names in this section was intentionally left optional, in order to maintain privacy of participants and to encourage them giving their full free opinions. However, they were still required to identify their gender, age group, level of education and average monthly income – to help with cross-tabulation analyses to follow.

The second section was about identifying the elements that shape the image of 'Historic Cairo'. After introducing a brief definition to the boundaries of the area in-study, the survey questions the degree of familiarity of participants with the place, again – to help with cross-tabulation analyses. Afterwards, and in the same section, respondents were required to name five main features / places that visually characterise the image of 'Historic Cairo' in their minds. The last section III applies the exact same structure of section II with reference to 'New Cairo'.

6. PILOT TESTING

A pilot study is an initial small-scale test to the feasibility of procedures that are intended to be applied to a larger scale [26]. In the present research, a pilot study took place prior to the questionnaire distribution. It was carried out by 7 randomly chosen respondents, who are not part of the main sample. The questions showed to be clear, and the average answering time was 6 minutes and 25 seconds. This confirmed the feasibility of the survey to extract worthwhile information for statistical analyses.

7. MEANS OF COMMUNICATION

Online surveys are known to provide meaningful information from reasonably sized samples over a relatively short time-span [24].

The survey took place in November 2018. It was published digitally in a self-administered Google form [27]. The web-link was further promoted via Facebook pages, personal contacts and snowballing techniques, as explained hereunder.

8. THE SAMPLE

The present study undertakes multi-stage sampling. It begins with random sampling to give every member in the population an equal opportunity to take part in the survey [25]. However, it is important to note that computer literacy could constrain the complete equal access, though the widespread of smart phones and availability of internet all around may limit the impact of this constraint.

Snow-ball techniques helped extend the sample, as participants were requested to encourage their own networks to take part in the survey. Snowballing is known to be an effective and fast technique for building-up a reasonable-sized sample [25].
The overall number of participants was 91, being of different genders, age-groups, income averages and degrees of familiarity with the areas in-study. 17 participants were excluded from the sample due to incompletion or irrelevance of the answers they provided. Hence, the final sample size concluded to 74 participants. Denscombe quotes *"Whatever the theoretical issues, the simple fact is that surveys and sampling are frequently used in small-scale involving between 30 and 250 cases"* [25: p. 24]. This confirms that this sample size is sufficient for the purpose of the study.

The graph in Fig. 3 below shows that the number of male participants 32 is slightly less than female participants 42. This suggests are reasonably balanced sample in terms of gender. On the other hand, Fig. 4 resembles a bell-like curve, with the largest number of participants aging 40-49 equating to 29 participants. However, the suggested bell-curve is slightly skewed towards younger groups. It is also interesting that the number of participants aging 60 or more, with a total number of 9 participants, was higher than the 50-59 group which was represented by 7 participants only. This can be an effect of the undertaken snow-ball sampling.

Both Fig. 5 and Fig. 6 below show that the less educated groups 6 with the least average income 9 were the least involved, while the largest segment of participants

were post-graduate degree holders 36, with the highest category of average monthly income 39. This can be due to their level of interest in the topic.

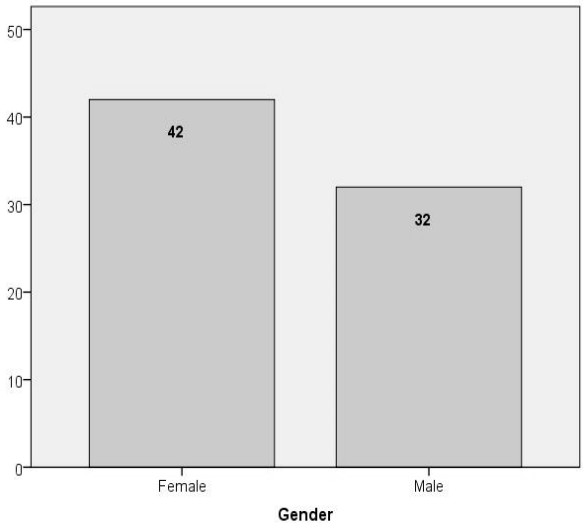

Fig. 3. Number of male/female participants.

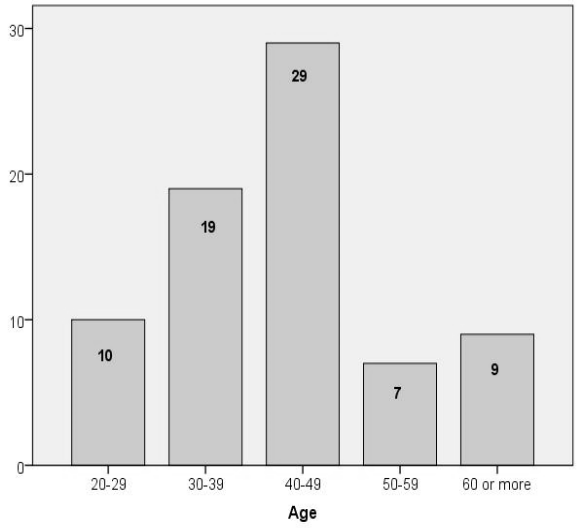

Fig. 4. Number of participants per age groups.

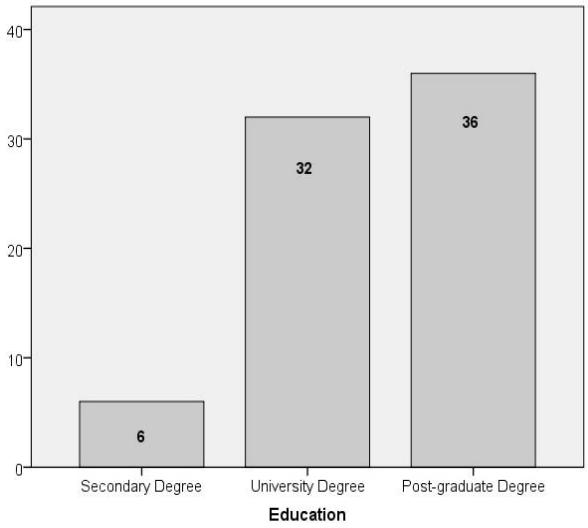

Fig. 5. Number of male / female participants.

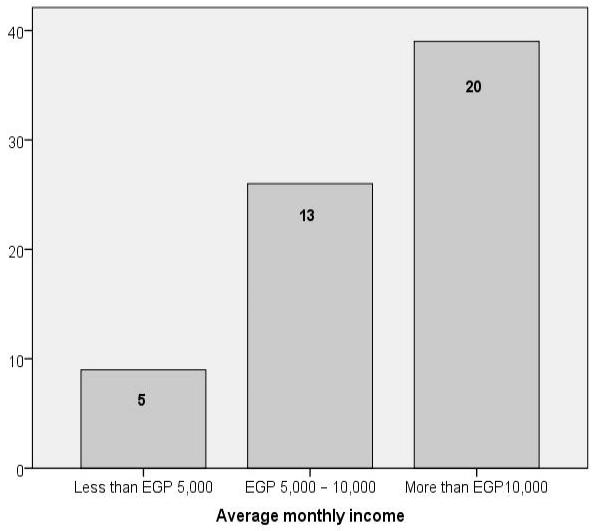

Fig. 6. Number of participants per average monthly income.

The following Figs. 7 and 8 show the degree of familiarity with ‘Historic Cairo’ and ‘New Cairo’ respectively. It is clear that the distribution of categories is more uniform in ‘New Cairo’. The lack of vacant plots, the scarce opportunities for developing new buildings/functions, the poor maintenance to existing buildings, the traffic jam and shortage in parking places are all factors that repel people from living in and visiting ‘Historic Cairo’.

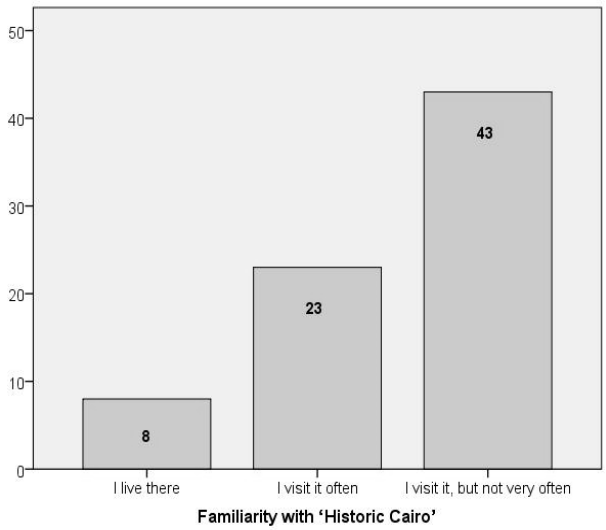

Fig. 7. Participants' degree of familiarity with 'Historic Cairo'.

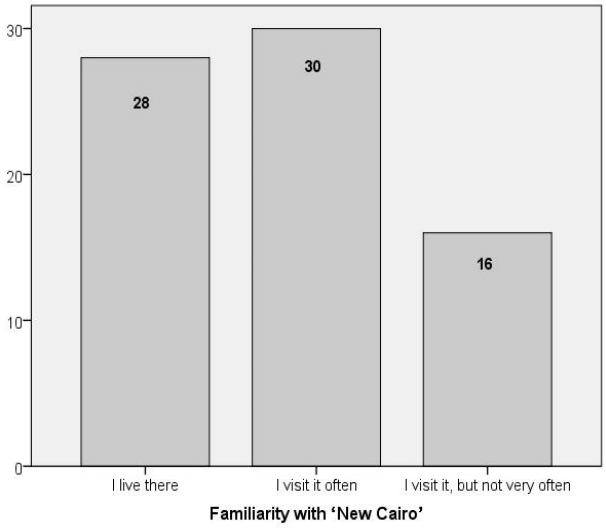

Fig. 8. Participants' degree of familiarity with 'New Cairo'.

This comes in complete contrast with 'New Cairo', where huge investments are being poured to develop massive residential and administrative projects that attract residents, developers, businesses and leisure facilities – hence bringing over larger numbers of residents and visitors.

9. PREPARING DATE FOR ANALYSES

After the survey results were automatically transferred from the Google document to a Microsoft Excel sheet, the file was saved to a local drive under a different name for coding and classification. A separate copy of the original sheet was kept intact for possible future reference. First, any respondent who gave less than three visual features – out of the required five – was excluded from the sample. Likewise, answers that were or out of the studied scope were excluded too. Then, the features named by respondents were all classified in accordance with Lynch's five elements, as defined above. The selected elements were then piled in five consecutive columns, maintaining the order of given answers, assuming that the categories mentioned first are more important to respondents, as a starting point. This assumption is further tested in subsequent procedures of the present study.

10. DATA ANALYSES PROCEDURES

The adopted method relates to quantitative paradigm. It involves a deductive process that depends on measuring a particular phenomenon numerically and objectively, assuming the researcher's independence from the subject in inquiry [25].

First, descriptive statistics "frequencies" were used to summarize the deduced data, as per both sites separately. This step was meant to find out which of the five elements is more selected in either area.

This was initially based on the frequencies of the first choice, assuming that importance can be based on earlier mentions. The findings are then compared against the overall frequencies of selected elements, and with assigning a descending relative weight to their overall frequencies, where the frequency of first selected elements is multiplied by 5 and the fifth-choice frequencies are multiplied by 1. This is meant to examine the validity of relying on first mentions in the subsequent cross tabulation and correlation tests.

Afterwards, cross tabulation tests are run to investigate for possible choices being done by particular groups of the involved sample. Whenever an apparent difference is detected, it is double-checked by one-way ANOVA test "analyses of variance" to examine any significant difference between the ratings of different groups. This was applied in association with the Scheff post-hoc test due to the multiplicity of studied groups. When the ANOVA significance factor is less than one in twenty "$p \leq 0.05$", this indicates that there is a meaningful difference in the perceptions of studied groups [25].

11. FREQUENCIES OF SELECTED ELEMENTS

The following section discusses the frequencies of selected elements, and how they may represent people's priorities in 'Historic Cairo' and in 'New Cairo'. It first discusses the frequencies outlined as a first choice. Then the sum-up of frequencies of every element in the complete choices of all respondents is shown for either context.

Figure 9 and Table 1 below show that landmarks recorded the highest frequency in 'Historic Cairo' – 59 out of the 74 participants. This was followed by a

large gap, where paths are chosen by 8 participants only. The rest of elements came in even less answers. This could be due to the intensity of historic monuments in the area. Not only do people relate these places to personal memories, but they also have special appreciation to their architectural, spiritual and symbolic values. For example, people have repeatedly referred to some historic mosques and churches in their responses.

It is also interesting that edges are not mentioned as a first choice in 'Historic Cairo' by any respondents at all, despite the symbolic significance of the Nile and the functional role of other edges like Salah Salem Road and Ramsis Street, which are major traffic axes in the City. However, this could be partly because the segment of the River the bounds the studies area is relatively short, if compared to the length of the segment cutting through the rest of the city.

Unlike 'Historic Cairo', discrepancies between people's choices in 'New Cairo' were less – see Fig. 10 and Table 1 next. Although landmarks came first 33, the subsequent elements counted 19 and 18. This makes the distribution of choices more uniform. However, nodes were never set as a first choice to respondents, which suggests that they are the least important to people in the context of 'New Cairo'. This can be further tested in the following section by working out the overall frequencies – in the five choices of all participants – to find out whether it is a matter of priority or a matter of principal importance.

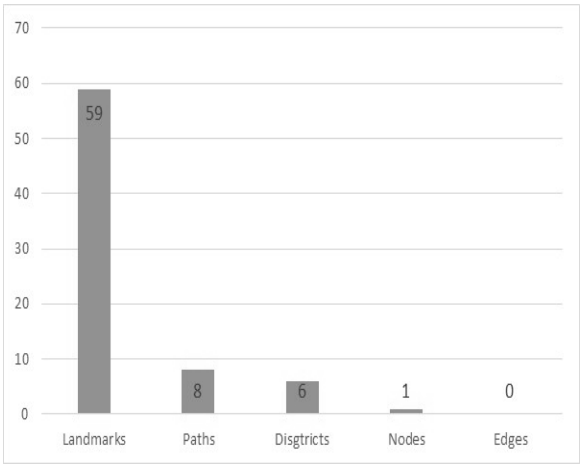

Fig. 9. Frequencies of selected elements in 'Historic Cairo'.

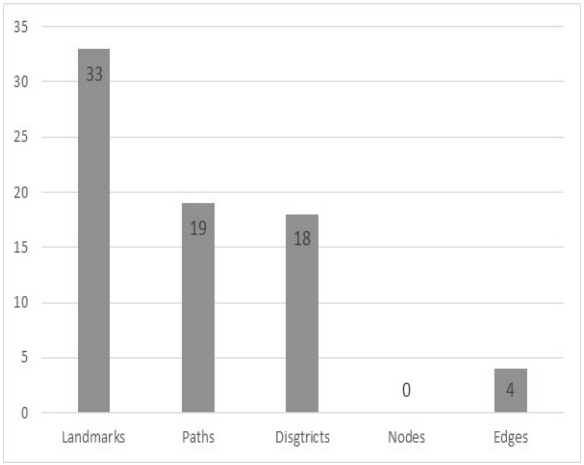

Fig. 10. Frequencies of selected elements in 'New Cairo'.

Table 1. Frequencies and order of first-selected elements in ‘Historic Cairo’ and ‘New Cairo’.

	Historic Cairo		New Cairo	
	Frequency	Order	Frequency	Order
District	6	3	18	3
Edge	-	5	4	4
Landmark	59	1	33	1
Node	1	4	-	5
Path	8	2	19	2

The following Table 2 shows that the way people rank the five elements is almost typical in both contexts. The only difference is the alternating ranking of edges and nodes between fourth and fifth place in both contexts.

Table 2. Frequencies and order of overall selected elements in ‘Historic Cairo’ and ‘New Cairo’.

	Historic Cairo		New Cairo	
	Frequency	Order	Frequency	Order
District	57	2	82	2
Edge	6	5	10	4
Landmark	223	1	191	1
Node	15	4	3	5
Path	52	3	49	3

Comparing the findings of Table 1 to Table 2, the priority of landmarks 1, nodes 4 and edges 5 in ‘Historic Cairo’ is unchanged as measured by the overall frequency of the first choice. On another hand, the individual selection placed paths second and districts third, while the overall frequency suggested a reversed order.

Likewise, in ‘New Cairo’, the priority of landmarks 1, edges 4 and nodes 5 in is unchanged between the overall frequency and the first choice. While the individual selection placed paths second and districts third, the overall frequency suggested that district were more important.

To this point, depending on first mentions seems to be reasonably dependable. However, in order not to ignore the significance of order as a possible indicator to priority, the following section undertakes another step towards confirming/refuting this assumption.

12. RELATIVE WEIGHTS

This section is meant to take the analyses one step further. It tries to examine the combined effect of order and frequencies together. It multiplies the frequency of every first choice element by 5, every second choice by 4, and so forth until the frequencies of the fifth and last choices are multiplied by 1. This is based on the assumption that the elements mentioned first are more important to respondents.

As for ‘New Cairo’, Table 3 hereunder shows a typical order to Table 1 and Table 2. Whereas for ‘Historic Cairo’ only the second and third ranks “paths and districts” are altered. In both studied areas, landmarks were the most important to the participant sample. It over-weighed the rest of elements by far. However, the least important element showed to be edges in ‘Historic Cairo’ and nodes in ‘New Cairo’, just as concluded by Table 1 and Table 2 earlier.

Table 3. Relative weight of selected elements in ‘Historic Cairo’ and ‘New Cairo’.

	Historic Cairo		New Cairo	
	Weight	Order	Weight	Order
District	146	3	267	2
Edge	15	5	33	4
Landmark	725	1	580	1
Node	40	4	7	5
Path	160	2	176	3

Therefore, the comparison between Tables 1, 2 and 3 shows that the assumption of importance based on earlier mentions can be reasonably validated. It has typically applied to all elements in ‘New Cairo’. Even in ‘Historic Cairo’, the first and last elements showed to be the same. This suggests that the forthcoming analyses can cautiously rely on this assumption.

13. CROSS-TABULATIONS AND CORRELATIONS

This section is meant to explore if there was a significant relationship between different participant groups and a particular selection of elements. Towards this objective, the study first runs cross tabulation tests. When a test shows some large

differences in the distribution of elements amongst the tested groups, one-way ANOVA tests – with Scheff post-hoc – are applied to check for statistical significance.

Although Fig. 11 below implies more selection of landmarks by females than males in ‘Historic Cairo’, this apparent difference showed to be insignificant 0.53 in the ANOVA test. Likewise, in ‘New Cairo’, Fig. 12, differences in male/female selection comes highest in paths. Yet, the ANOVA test showed no significance 0.137 of such difference.

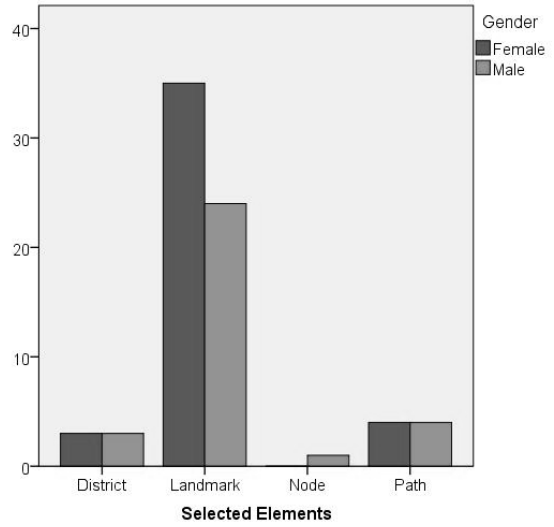

Fig. 11. Cross-tabulations for gender vs. selected elements in ‘Historic Cairo’.

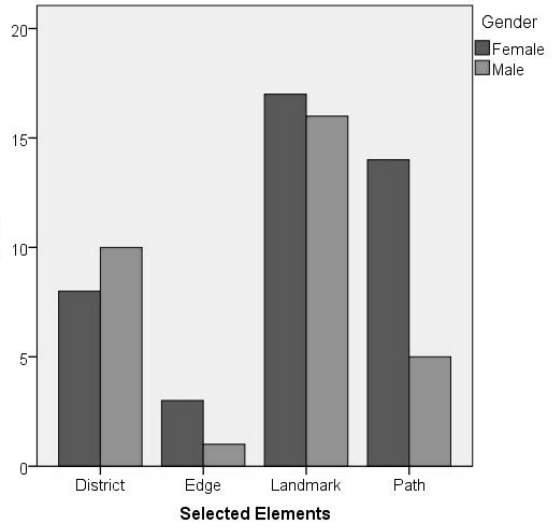

Fig. 12. Cross-tabulations for gender vs. selected elements in ‘New Cairo’.

Comparing the landmark choice by 40-46 year old participants, to that of the 20-29 years old, the difference seems vast in ‘Historic Cairo’, Fig. 13. Yet the ANOVA test shows no significance to this difference. The differences within element selections in ‘New Cairo’ seem even greater, particularly when looking at landmarks, where the gap between 40-49 and 50-59; though with no statistical significance, see Fig. 14.

It is also interesting that none of the 30-39 group has selected districts in ‘Historic Cairo’ despite their comparable representation in the rest of elements. This looks even more eccentric in ‘New Cairo’, where edges are only referred to by 40-49 and 50-59 groups. It would be interesting to develop future studies to understand the underlying forces behind such choices amongst the different age groups.

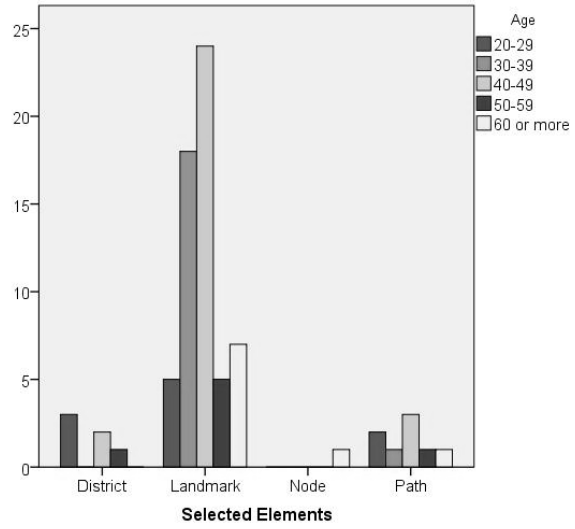

Fig. 13. Cross-tabulations for age vs. selected elements in 'Historic Cairo'.

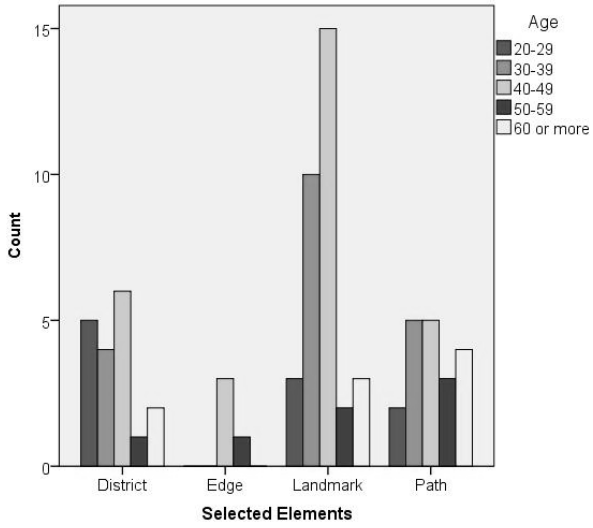

Fig. 14. Cross-tabulations for age vs. selected elements in 'New Cairo'.

The following Fig. 15 suggests a large difference between the choice of secondary degree holders to landmarks from their selection to other elements in 'Historic Cairo'. The ANOVA test showed this difference to be highly significant p = 0.029. The same applies to university degree holders, whose choice of landmarks yielded to a significance factor of 0.031. This is shown in Table 4 hereunder, as extracted from SPSS.

Table 4. ANOVA output table for the correlation between 'education' and the choice of elements.

(I) Education	(J) Education	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.0	2.0	-1.5313*	.5612	.029	-2.934	-.128
	3.0	-1.5000*	.5562	.031	-2.891	-.109
2.0	1.0	1.5313*	.5612	.029	.128	2.934
	3.0	.0313	.3065	.995	-.735	.798
3.0	1.0	1.5000*	.5562	.031	.109	2.891
	2.0	-.0313	.3065	.995	-.798	.735

*. The mean difference is significant at the 0.05 level.

The author refers this discrepancy to the likely broader exposure of postgraduate participants, as compared to other educational categories. Such exposure has possibly extended their awareness of the role of other elements towards the city's imageability, which has contributed to diversifying their choices more evenly.

On the contrary, Fig. 16 suggests a balanced distribution of element selection per attained education in 'New Cairo', except for the apparent difference in the choice of university degree holders to landmarks as compared to edges for example. However, the ANOVA test showed this difference to be statistically insignificant.

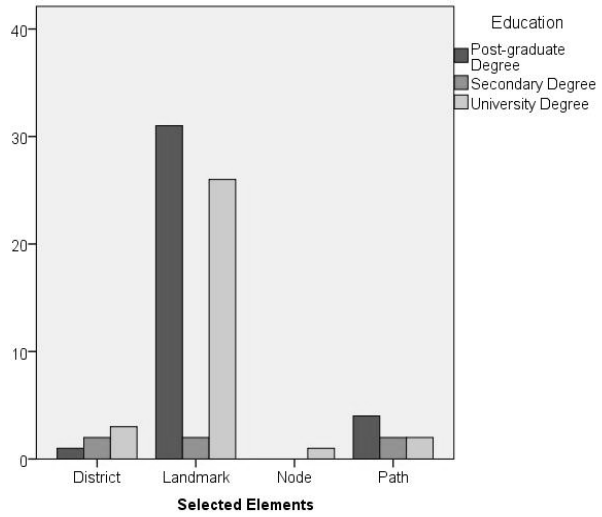

Fig. 15. Cross-tabulations for education vs. selected elements in 'Historic Cairo'.

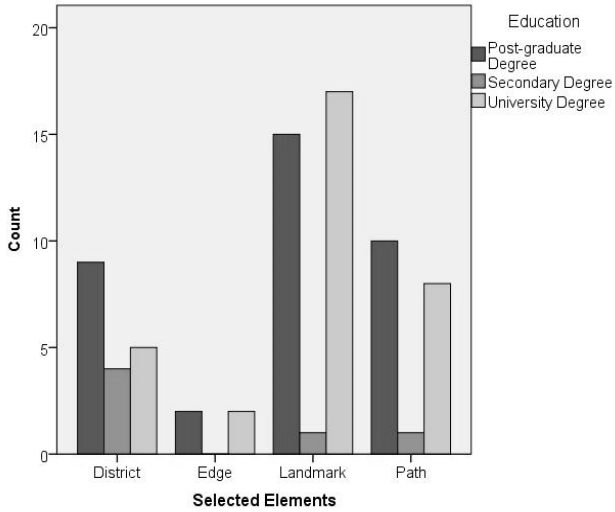

Fig. 16. Cross-tabulations for education vs. selected elements in 'New Cairo'.

Just as in the cross-tabulations against attained education, the apparent difference in choices made by higher and middle-income groups in 'Historic Cairo' – Fig. 17 concluded to be insignificant. On the other hand, the more balanced choices in 'New Cairo' are also clear in Fig. 18 and are confirmed by the low significance of the ANOVA test. Again, choices made by low income groups have totally disregarded edges, which calls for future investigation as suggested earlier in this research.

Once more, the apparent difference of element choices in relation to familiarity with 'Historic Cairo' as seen in Fig. 19 showed to be insignificant. However, it is clear from the sample profile that almost half of the sample do not visit 'Historic Cairo' so often. This could be a reason why they tended to choose famous buildings and landmarks that build more on their general knowledge rather than their direct

experience with the area. This interpretation can also apply to the minor difference in participants' familiarity with 'New Cairo' as shown in Fig. 20, where the vast majority of the sample either lived in 'New Cairo' or visited it often. This has concluded to more even distribution to their chosen elements, except for the edges as discussed above. However, the ANOVA test concluded that none of the differences is of statistical significance.

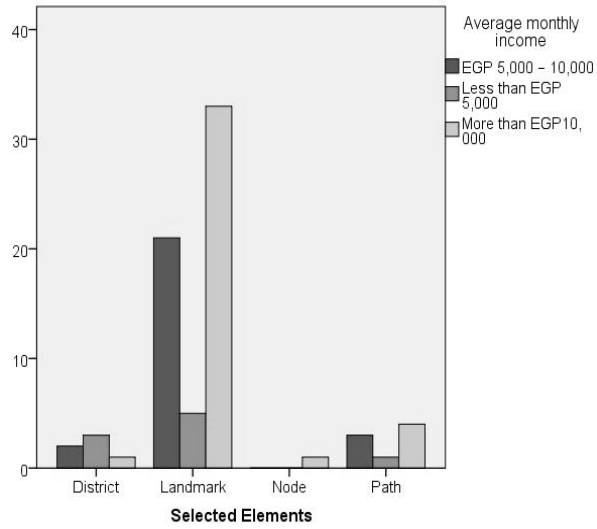

Fig. 17. Cross-tabulations for average monthly income vs. selected elements in 'Historic Cairo'.

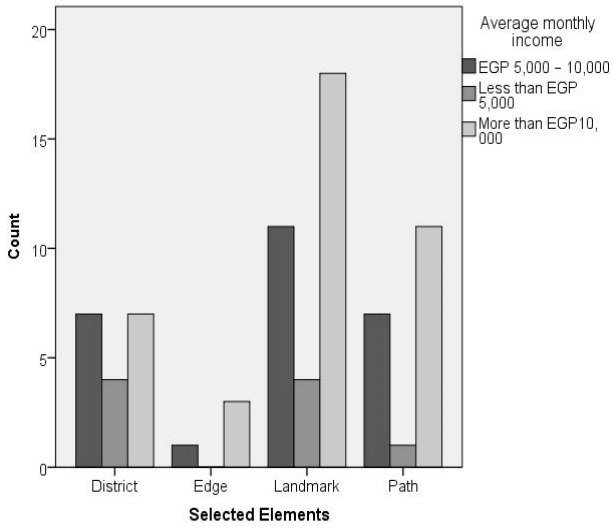

Fig. 18. Cross-tabulations for average monthly income vs. selected elements in 'New Cairo'.

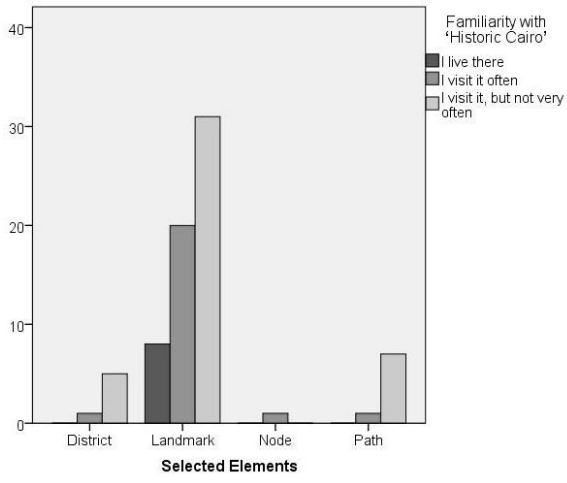

Fig. 19. Cross-tabulations for Familiarity vs. selected elements in 'Historic Cairo'.

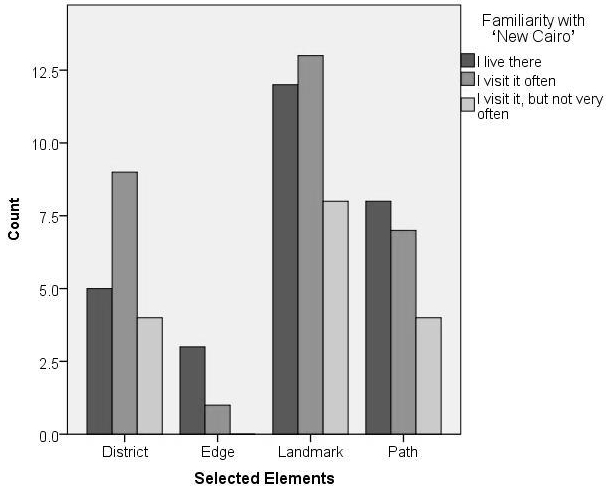

Fig. 20. Cross-tabulations for Familiarity vs. selected elements in 'New Cairo'.

14. CONCLUSION

The present study was meant to explore empirically how people prioritise the elements of city image in historic and modern urban settlements – as applied to Cairo, Egypt. Lynch is a key-figure in environmental design and behavioural studies, whose work is highly credible and widely used in recent research-work. Therefore, the study builds on his five main elements of city image [2].

First, the model in-study was introduced briefly together with its theoretical backgrounds. The empirical research design was then outlined to pave the way for the subsequent analyses and discussions.

The scope of the study addressed ‘Historic Cairo’ as defined by Law 119/2008, and ‘New Cairo’ as defined by Presidential Decree number 191/2000. The overall sample involved 74 participants of different genders, age groups, average monthly income and educational backgrounds.

Statistical analyses of the purpose-designed questionnaire showed that landmarks had the highest frequency in both contexts, whether as a first choice, in overall frequency or with the assignment of relative weights. On the other hand, edges came least in ‘Historic Cairo’, and nodes came least in ‘New Cairo’. This also applies on the basis of first selection, overall frequency and when relative weights are considered. Thus, the assumption of importance based on earlier mentions showed to be reasonably validated, and could be cautiously used in the undertaken analyses.

Despite some apparent differences in the selections made by particular sub-groups in cross tabulation tests, the only significant differences detected by ANOVA test was between the choice of secondary degree holders to landmarks from their selection to other elements in ‘Historic Cairo’ $p = 0.029$. The same applies to university degree holders, whose choice of landmarks yielded to a significance factor of $p = 0.031$.

It is recommended that future research investigates why edges had less importance to particular sub-groups in ‘Historic Cairo’, and why nodes were less important to the imageability of ‘New Cairo’, as per different participant-groups.

Lynch argued that these elements are interconnected parts, whose holistic syntheses may create the vivid and unified image of a city [2]. Therefore, the excessive choice to one element "landmarks", and the exclusion of others "edges and nodes" might not be in favour of the overall city's imageability.

The present study suggests that urban livability can be one possible factor. In Lynch's terms, people tend to remember the elements they have 'experience' with. If, for example, people encounter some memorable experiences in particular buildings / places, they are likely to influence their perceived significance "e.g. landmarks here". Thus, a better city image can be realised by promoting more lively activities / experiences in the less memorable elements "e.g. edges and nodes", so that they become more influential in people's perception to the image of the city. This can be an important step towards improving the 'experience' of the whole city, and promoting the poetic and symbolic meanings that Lynch referred to, so that people would associate all kinds of elements with their integral image of the city.

For that Lynch's model is principally meant to analyse and improve the visual forms of cities, it is important that architects, urban designers and city planners consider these findings in their forthcoming designs, so that people can effortlessly perceive and navigate their urban landscapes, hence realising a more harmonious, legible, and imageable built environment.

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عناصر الصورة الذهنية للمدينة : تدقيق الأولوية بين القاهرة التاريخية والقاهرة الجديدة

يقدم البحث استطلاع أولويات السكان فى ترتيب عناصر الصورة الذهنية للمدينة كما حددها كيفن لاينش، بالنسبة لكل من القاهرة التاريخية والقاهرة الجديدة بعينه من 74 من سكان القاهرة حيث تم التحليل الكمى للإجابات وتبين أن المعالم (landmarks) هى الأولوية الأولى فى ادراك الناس لصورة المنطقتين وفى حين كانت الحواف (edges) هى الأقل تأثيرا في الصورة الذهنية للقاهرة التارخية ، وكانت نقاط الالتقاء(nodes) هى الأقل تأثيرا بالنسبة لصورة القاهرة الجديدة ، وبهذا فإن تلك النتائج تفيد المصممين والمطورين المحليين فى تطوير البيئة العمرانية بشكل أكثر تناسبا مع أولويات السكان.