

DOI: [10.38027/ICCAUA2022EN0212](https://doi.org/10.38027/ICCAUA2022EN0212)

## From Picturesque Landscapes to Brand-new Cities: A Survey for Understanding the Effects of Protective Structures on Visitor Impression

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### Abstract

In order to prevent the deterioration of immovable architectural artefacts unearthed in archaeological sites, it is observed that protective structures are applied. A considerable number of applications for both temporary and permanent protective structures have significant differences in terms of design, scale and material whereas the visitor impression is not particularly taken into account. In this study protective structures are classified according to their practice in the archaeological sites and a survey-based evaluation is revealed in which visitors indicate responses for their impressions. Furthermore, it has been stated that even though there are principles for new structures provisioned by international charters and regulations, there are not only professional approaches but also visitor impressions and experiences that should be considered as design criteria. In conclusion, the research points out the importance of engagement of visitors in the design process regarding the site effect of the protective structures.

**Keywords:** Archaeological Conservation; Protective Structures; Archaeological Preservation; Architectural Remains.

### 1. Introduction

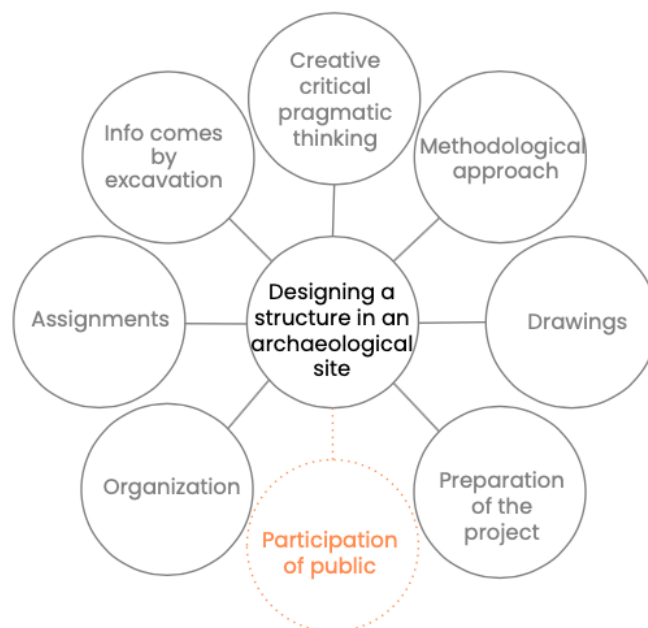
Protective structures have been applied in many archaeological sites at an increasing pace. Those structures used in archaeological sites have been criticised more after the roof construction built over the Göbeklitepe archaeological excavations in Turkey in recent years (Yılmaz et al., 2019). In Turkey, which is rich with archaeological sites, it is possible to encounter examples of protective structures in very different scales and styles (Tanaç Zeren and Uyar, 2010). When the examples are examined, it would be appropriate to say that most of the applications made, completely disturb the picturesque appearance of the archaeological sites and give the atmosphere of a city that is under construction, where even the cranes enter the perspective. Due to the construction works going on at archaeological sites, it is understandable that visitors liken archaeological sites to “Disneyland” (Kocaman, 2020). However, protective structures should have an appearance that establishes a contextual relationship with the architectural remains, articulates and harmonises with the artefacts and/or the site, rather than being a structure that overshadows the architectural remains and/or the archaeological site that attracts all attention (Krizinger, 2000). So much so that while the protective structures with their architectural features and emphasis put the archaeological artefacts in the background, unfortunately, visitors often only remember the protective structures as an image of the archaeological site (Hauselmayer, 2000; Rahman and Fatemi, 2021).

Protective structures are widely used in archaeological sites for many reasons (Kocaman, 2021). These structures help to protect architectural remains against sun, rain, snow and frost for a longer period of time (Dikilitaş, 2010; Ertosun, 2012). Besides protecting from climatic deterioration, a well-designed structure can also serve to create a physical appearance for archaeological remains, and provide a temporary working space underneath, or limit the access hence guarding against vandalism/theft (Wunderer, 2000; Pedeli and Pulga, 2013). Protective structures can also be used to highlight architectural remains, provide better visibility by improving site presentation and making features more accessible to the public.

There are many international regulations accepted regarding the in situ preservation of artefacts unearthed in archaeological sites (i.e. UNESCO, 1956; ICOMOS, 1990, 2008). Following the necessary protection measures applied to remains, it is recommended to carry out exhibition solutions where each visitor can best understand the value of the remains (ICOMOS, 1964; Ahunbay, 1999). In this context, although the structure applications for the protection and exhibition of immovable architectural artefacts are seen as a positive approach, the mistakes in the applications, the elementary solutions arising from the budget and the design identities of the structures cause to overshadow or even not protect the remains they are obliged to protect (Feilden, 1994). In the formation of the design identities of the protective structures, many parameters are handled by the experts of the subject and the problems faced by the remains are tried to be solved, but these solutions do not always result in the correct perception of the remains and the site by the visitors (Severson, 1999; Orbaşlı, 2008; Savrum Kortoğlu, 2013). Some of the negative aspects of protective structures are that the remains and sites fall behind compared to the protective structures, they lose their integrity, a point stands out or attracts too much attention compared with the rest of the site, and the perception of the size of the remains and the site is lost. Although these negativities are ignored in temporary protective structures compared to permanent ones,

the perception that visitors experience for that singular time period during their visit is permanent. According to a preliminary observation it can be highlighted that when examining the perception of protective structures on visitors, it does not matter whether they are temporary or permanent.

The aim of this research is to understand how the protective structures applied in the archaeological sites in Turkey are visually evaluated by the visitors and question how to ensure public participation in the design process. With this aim, 129 people from different education levels and ages responded to the survey conducted within the scope of the research. While professional approaches are given importance in the design process of protective structures applied in archaeological sites, visitor impressions are not taken into account (Figure 1). Within the scope of this study, questions are asked to the participants in order to emphasise the importance of the participation of the visitors in the design process. Visitors of various ages and occupations are reached through the questionnaire created for the study, and their experiences and impressions of protective structures are evaluated.



**Figure 1.** Design process contextualisation for protective structures (by Authors).

Several experts from different disciplines are involved in the design of protective structures in archaeological sites. Archaeologists, architects, civil engineers, conservators and landscape architects are among the main disciplines, but the contributions of the visitors and stakeholders are left out of the process. Similarly, although there are extensive studies on the design of protective structures to be applied in archaeological sites in the literature reviews, a study supporting public participation in the design process has not been found. In this research, the design criteria of protective structures are only discussed under general headings and do not constitute the main subject focus.

### 1.1 Criteria for Decision Making Process

Protective structures can be classified according to several criteria in a particular duration of usage, material, budget and scale (Pedeli and Pulga, 2013). Barker (1986) points out the differences between the temporary and permanent protective structures and their effect on the design decision. The differences between the two systems are the materials used to construct the shrouds and the system design. Temporary structures are constructed as simple metal and timber constructions based on tent-like elements or more traditional materials (Mollaert et al., 2013). Permanent structures, on the other hand, are advanced design applications that provide a controlled environment in the entire area where the archaeological remains are located, and consist of systems where wide openings are passed with very few support (Aslan, 1997; Severson, 1999; İpekoğlu and Çetin, 2013). Schmidt (1988) categories the protective structures as a)temporary protections, b)protection roofs, c)partly enclosing protective structures and d)all-side closed constructions/buildings whereas Vozikis (2005) categories based on their materials as a)metallic, b)wooden, c)concrete and/or brick, d)membrane or textile.

Due to the classification of the structures the design approaches and criteria are also changing. As stated by Vozikis (2005), the criteria affecting the design of protective structures can basically be grouped under 10 headings. Consequently, protective structures should be:

- reversible,

- low-tech, low cost and low maintenance,
- considered for microclimatic effects,
- aesthetically compatible with site, environment and landscape,
- designed by the materials that support the aesthetic impact positively and never alienate the whole impression,
- contributed to the visitor's educational experience,
- integrated informative aids for the understanding of every visitor,
- lighting,
- accessible, comfortable and safe guidance path. This classification is worth attention for dealing with the visitor

parameter as well as technically regulated headings. Santoro and Santopouli (2000) highlight 5 important points for protective structures that should:

- give comfortable height for the works going on such as excavation, documentation, etc.
- have an optimised lightening
- be stable and well covering the excavated area,
- be reversible,
- be reusable. In comparison with visitor oriented classification of Vozikis (2005), Santoro and Santopouli (2000)

focused mostly on the comfort of the excavation team. Besides, Tanaç Zeren and Uyar (2010) propose 5 criteria to be well-considered during the planning process of the protective structures should:

- land conditions of the archaeological site (such as ground characteristics of the region, groundwater level),
- climate conditions,
- status of archaeological remains to be protected,
- excavation site settlement area,
- economic inputs. The criteria defined by Tanaç Zeren and Uyar (2010) are mainly underlying technical requirements

for the structures.

Although protective structures have advantages such as creating a microclimate and allowing architectural finds to be exhibited where they are, they have disadvantages such as preventing artefacts from being perceived and adding a different dimension to the area (Çamurcuoğlu, 2010). If the microclimatic conditions created by the protective structures can be set up correctly (by determining the most ideal temperature, humidity and air circulation for the work), the artefacts excavated from the ground can be prevented from entering a rapid deformation process by suddenly encountering severe weather conditions.

## 1.2 Prominent Examples

The roof on Casa Grande, which was designed to protect an adobe structure built by the Hohokam American Indians between 1200-1450 AD, is a pioneering example in this context (Rael, 2008). In Arizona, the roof over the ruins of Casa Grande was built in 1903 (Rizzi, 2008) (Figure 2). The first structure, made of wood and iron materials, was replaced in 1932 with a metal roof covered over steel carriers (Figure 2). Aside from the poor protection of the existing roof due to the fact that the structure is far above the ruins, the roof visually has a very different meaning from the architectural remains.



**Figure 2.** Casa Grande in Arizona, the protective structures were applied in 1903 on the left and 1932 on the right (URL - 1, 2022).

In 1977, a Swiss architect group in Greece thought that the Acropolis should be covered with a complete dome because it was so affected by weather conditions and air pollution, and they prepared a project on this subject. In this way, original marble blocks, decorations and sculptures belonging to the Acropolis will be able to be replaced (Schmidt, 1988). The

project cannot be realised due to the budget of the project, the square metres it needs to cover, and the difficulties related to the application details (Figure 3). Although this project could not be realised, it can be considered a very important landmark as an innovative initiative. It is very clear that keeping every archaeological site as a whole under a total protective structure is not an efficient solution, besides isolating the visitors from having visual contact with the context such as the site, settlement, city and/or nature.



**Figure 3.** Acropolis of Athens, the project was developed in 1977 for covering the Acropolis (Schmidt, 1988).

This synthetic membrane tent, which is designed to protect the Bassae Apollo Temple from damage during the conservation works and is planned to be used temporarily until the restoration and conservation works are completed, is visually dominant in the area and prevents visitors from interacting with the original remains of the temple (Figure 4a). The temporary solution also has question marks for being considered a new permanent - temporary because of the long term restoration and conservation interventions that are still going on (Vozikis, 2005).

The structure applied to protect Göbeklitepe, where the remains date back to B.C. 1200s, was completed in 2018 and covers an area of approximately 4,000 square metres (Figure 4b) (İrepoğlu, 2019). In the first winter after the construction of the roof was completed, it was understood that the eaves of the roof were not long enough to prevent snowfall, but no expansion could be made due to its unique form. In addition to the fact that this gigantic roof is not able to protect the ruins, it is also the visual weight it brings to the site and the loss of the visitors' sense of scale.



**Figure 4.** a. Temple of Apollo Epikourios in Bassae on the left (URL - 2, 2022) and b. Göbeklitepe Excavation Site on the right (URL - 3, 2022).

In this context, many more examples can be presented according to their positive and negative characteristics, but since the research focuses on visitor impressions, examining a large number of examples is beyond the scope of this research.

## 2. Material and Methods

Surveys are an efficient tool for collecting data on ideas or concepts that are difficult to quantify, such as opinions, impressions, and attitudes. Additionally, questionnaires can also be used to gather information about behaviours that cannot be directly observed, by documenting whether participants are willing to respond. However, before creating a questionnaire, it is imperative to decide whether a survey is the best method to address the research question or topic of interest (Artino et al., 2014). In the related studies on protective structures, it has been realised that among the design

criteria, the opinions of the visitors whom the structures are in direct visual interaction with are not included. Considering that the visitors experience the site and the protective structures, the participation of the visitors in the visual impact of the final product is seen as a necessity. Due to this research focused on understanding the impression of visitors regarding the protective structures applied in archaeological sites, a survey-based evaluation as a methodology is revealed in which visitors indicate responses for their impressions. The research is also used for understanding the level of participation of the public in the case of a design process for protective structures that will be applied in archaeological sites.

### **2.1 Type of the Questionnaire**

The sources for the research are examined and a measurement tool suitable for the purpose of the study could not be found. For this reason, a purpose-oriented questionnaire is developed. The questions are designed according to three different types of responses. These are:

- Closed-ended “yes/no” response options
- Closed-ended labelling response options with both numbers and verbal labels on a scale of 1 to 5 to express the level of agreement
  - 1: I totally disagree
  - 2: I disagree
  - 3: Neither agree nor disagree
  - 4: I agree
  - 5: I totally agree
- Open-ended short responses.

During the survey, closed-ended responses are emphasised rather than long answered long questions in order to prevent the participants from giving up on the survey. Open-ended responses are also used with a limited number of questions in which the personal approach of the participants is important.

### **2.2 Target Group of the Questionnaire**

The target of the research consists of participants who visit archaeological sites. Through the questionnaire created within the scope of the study, 129 respondents who visited the archaeological sites are reached. The analyses are carried out on the impressions of these participants.

### **2.3 Context of the Questionnaire**

The questionnaire consists of three parts and 10 questions. In the first part of the questionnaire, the general profiles of the participants are determined by asking questions about the age and professional knowledge of the people participating in the research. In the second part, there are questions to learn the impressions of the visitors about the protective structures applied in archaeological sites. The third and last part, it is aimed to make a more detailed assessment of the opinions of the participants by asking critical questions about the protective structures.

Attention is taken to ensure that the questions are clear and understandable. The questionnaire form is directed to the participants via online with email groups and social media accounts.

### **2.4 Evaluating Technic of the Questionnaire**

The responses to the questionnaire are collected via Google Forms and they are examined in detail. The responses to the closed-ended questions are separated according to their percentages with a pie chart and made more understandable. In addition, the responses to the open-ended questions are classified according to their consistency or compatibility and presented as a pie chart according to the intensity of the answers. The responses that are singular in the answers and weak compared to the other answers are combined under the title called "other".

## **3. Analysis**

In this part of the research, the results obtained from the survey are evaluated with the percentage method for each factor and the findings are analysed. In accordance with the purpose of the research, the responses to the questions collected in three sections are presented in graphics.

### **3.1 Part 1 Participant Profile**

In the first set of questions, the findings related to the participant profile are analysed and the percentage distributions are presented with figures.

The age distribution of the participants is shown in Figure 5. When the findings of the research are examined, it is seen that 56% of the participants are concentrated in the 20-29 age range. This density is followed by those between the ages of 30-39 with 32%. It is seen that 2% of the respondents over the age of 50 participated in the survey.



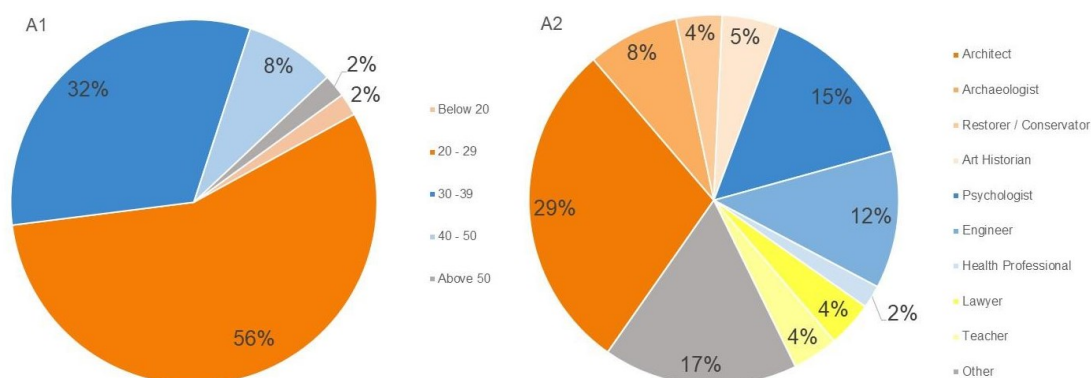


Figure 5. Age and profession of the participants.

The profession / branch distribution of the participants is shown in Figure 2. It is striking that most of the people participating in the survey are in the field of architecture with 29%. After architecture comes psychologists, engineers, archaeologists, art historians, restorers, teachers and lawyers. Professions with low density participating in the survey are gathered together and included in the other 17%.

### 3.2 Part 2 Focus on Protective Structures

In the second set of questions, the participants are asked about the effect of protective structures on the visibility and authenticity of the architectural remains at archaeological sites and their opinions are evaluated. The answers given to the questions are shown in the graph in Figure 6.

The question asked about the relationship between the protective structures and their visual effect on the architectural remains, is answered as "strongly agree" by 48% of the participants.

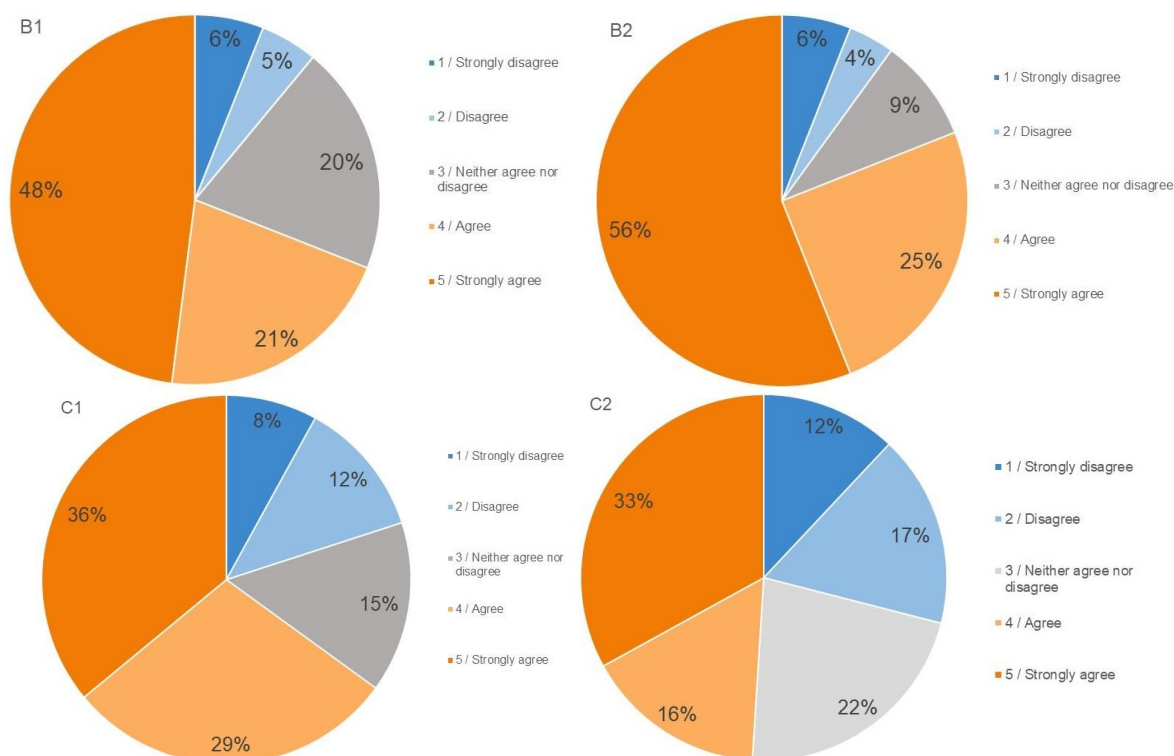


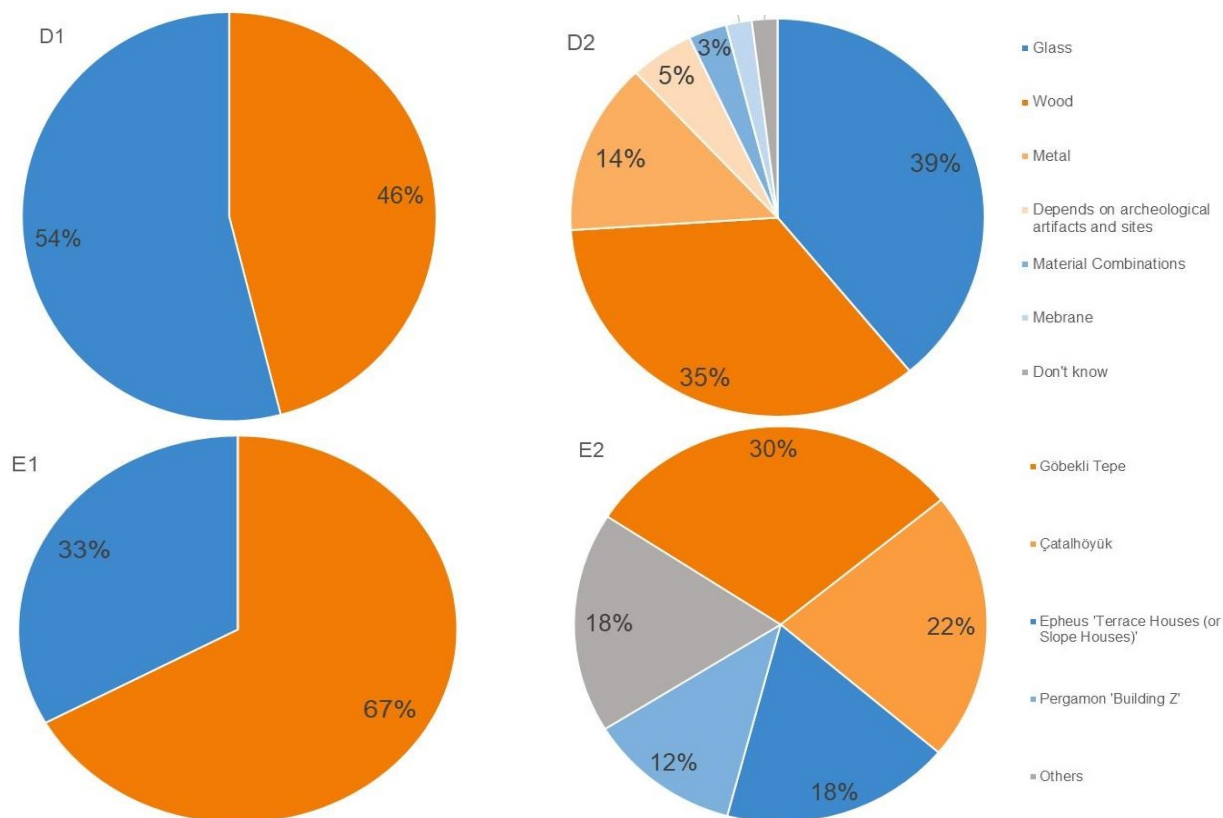
Figure 6. The effect of protective structures on the visibility of the monument (B1), site (B2) and the effect of protective structures on the authenticity of the monument (C1) and site (C2).

On the other hand, it is seen that 36% of the participants answer "strongly agree" to the question asked about the effect of the conservation structures on the authenticity of the architectural remains and the site. The answers given by the participants are shown in the graph, Figure 4. Looking at the answers to the questionnaire, the participants agree that the protective structures change the authenticity of the architectural remains and archaeological sites.

### 3.3 Part 3 Critiques

In the third set of questions, it is aimed to reach a more detailed visitor evaluation by asking the participants about the examples of protective structures.

The answers by the participants about the protective structures they encountered in archaeological sites as visitors are given in Figure 7. It is seen that 54% of the participants are not satisfied with the protective structures they encounter in archaeological sites.



**Figure 7.** Satisfactory level of the visitor (D1), material as a preference (D2), digital apps as an alternative (E1) and successful protective structure examples (E2).

The answers they gave to the question about which materials used make the protective structures more visually interesting are shown in Figure 7. 39% of the participants prefer structures using glass, followed by 35% for timber materials.

When the participants are asked whether digital applications could create an alternative to protective structures, 67% think that they would create an alternative by saying yes. The distribution of answers given to the question is shown in Figure 7.

Participants are asked to give examples of conservation structures that they found successful. The examples given in Figure 8 can be seen. As a result of the answers given, Göbeklitepe with 30% and Çatalhöyük with 22% are seen as successful examples.

## 4. Discussion

During the answering of the questionnaire by the first participants, there was a criticism from the two participants that there was not enough explanation at the beginning of the questionnaire about what the protective structures are, and the practitioners immediately intervened at this point and information about protective structures was put in the introduction part of the questionnaire.

Regarding the results of the questionnaire, it can be assumed that the participants accepted that the protective structures visually affect the architectural remains and archaeological sites and change their authenticity. In particular, while the absolute majority of agreements have been recorded for the questions in groups B, C and E, an equal distribution in D1 and various opinions are recorded in D2 except for the two dominant answers. In B2, the question about whether the protective structures are effective in the visualisation of the archaeological site is recorded as the highest agreement (85%).

This aspect may suggest that the participants approach the visibility of the archaeological site differently from the visibility of the architectural remains and give more importance to the appearance of the site.

The satisfaction level of the participants related to the protective structures in archaeological sites that they encountered is low and 98% of the participants answered the question “What kind of material/s that are used in protective structures are more interesting for you from the visual point of view?”. Thus, in the case of proposing material alternatives, participants will choose the one that they are visually satisfied with. During the design process the material alternatives can be improved by professionals and with digital applications they will be opened to the public to be voted on. Virtual reality and wearable technologies should also be considered for maximising the visitor experience.

Several protective structures also aim at interpretation and representation of the architectural remains which is possible today by using digital applications; however, the participants' response to the digital applications cannot create an alternative. Even though the negative effect of protective structures on the visibility of the archaeological sites is agreed upon by participants, Çatalhöyük and Göbeklitepe are the most given successful examples in contrast.

## 5. Conclusion

In the presented research, after a scrupulous analysis of the process ideas of the existing examples and the design criteria for protective structures, it became clear that public participation is extremely necessary for the design of protective structures. The study also questions at what stage and to what extent public participation could be integrated into the decision mechanism.

It is clear that the technical decisions should be left to professionals whereas it would be appropriate to take the opinions of the public and involve them in the process of determining the visual effects of the protective structures.

The involvement of the public in decisions about the visibility of the monuments and sites does not have a strict part in all the processes hence the feedback coming from the public should be integrated with the draft projects during the form design, material and scale selection, etc. Besides, it has been understood during the research that the participants are willing to express their opinions about the appearance of the cultural heritage, which is the right of the public.

The limit of the research is that a couple of the professions show dominance due to the circles of the people whom do the work being used in the sharing of social media and email groups.

As a result, the questionnaire recorded that integration of the public is possible for decisions taken for the visibility of the protective structures on the monuments and/or the archaeological sites; however, since the procedure has been applied only once, to understand its reliability it would be beneficial to apply the model to a higher number of participants, preferably with a satisfactory level of different background.

This research is planned to be developed in the future by testing on a model that will be used in protective structure applications which have an ongoing design.

## Acknowledgements

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Conflict of Interests

The authors declare no conflict of interest.

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