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Original Research Article

An Approach to Enhance the Validity of Qualitative Evaluations in Conservation Interventions of Historical Monuments Case Study: Khajeh Atabak Tomb in Kerman

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Abstract

Problem statement: Evaluation of conservation interventions performed on historical monuments is the basis for exchanging experiences, modifying approaches in choosing intervention methods and preventing irreparable errors in their conservation. Due to the complexity of the evaluation process and the failure to provide strategies that can make the result reliable by enhancing the validity of this evaluation; in Iran, interventions are either not evaluated or often evaluated tastefully without a specific strategy.

Research objective: This study aims to extract the factors affecting the reliability of the evaluations, which are carried out with the approach of determining the scientific validity of the interventions. moreover, it aims to achieving an approach to increase the validity of the evaluation process and the accuracy of the results and applying it to a case study for the proposed strategy test.

Research method: In this applied research, first, the factors affecting the reliability of evaluation using documentary studies and descriptive analysis have been extracted from conservation texts and Charters. Then, through qualitative analysis, logical and strategic reasoning methods were developed for evaluation. In order to evaluate the effect of the case study and to test the approach, The values of the object and the conservationist's priorities and objectives at the time of the intervention were provided to local conservationists by a semi-structured in-depth interview. Finally, the results of the survey which was conducted using a questionnaire were qualitatively analyzed and presented.

Conclusion: The findings show that for qualitative evaluation of conservation interventions, an approach based on the principle of participatory understanding of the work, reference to the five principles of protection and promotion of evaluator's awareness of the five principles and values of the object can be used. Also, the application of the resulting strategy on Khajeh Atabak tomb showed that the degree of validity and scientific reliability of the intervention in the conservation of stucco decoration is prior to the vault hooping.

Keywords: *Heritage Conservation, Conservation Interventions, Qualitative Evaluation, Reliability, Tomb of Khajeh Atabak.*

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Introduction

Without a conservation intervention, no practical conservation experience will neither occur nor make sense. Evaluation of interventions performed in a historical object paves the way for the exchange of experience and participation in a collective effort to evolve conservation thoughts. According to contemporary conservation perspectives, checking and reviewing intervention (ICOMOS, 2003, art 3-21) or in other words, evaluating practical experiences of conservation to determine the quality of success or failure of methods of dealing with the monuments is considered as a useful measure to correct approaches and experiences. It prevents the recurrence of irreparable errors and create the possibility of a reliable comparison of experiences and promotion of skills in heritage conservation is considered. However, actually, there are many thematic and methodological and sometimes contradictory ambiguities in the field of intervention evaluation, resulting from the complicated nature of conservation and its intertwined objective and subjective issues.

Cultural heritage conservation is a multi-contextual measure (Mason, 2002, 7) in which various issues are uniformly intertwined to create practical conservation experiences. When planning a qualitative or quantitative evaluation plan for completed or ongoing projects or its results, it is important to consider the objectivity or subjectivity of the evaluated subject (Henderson & Waller, 2016). In addition, in order to achieve the evaluation, we need criteria to use them as quantitative or qualitative indicators in the measurement process (Austrian Development Agency, 2009). However, complex, changing and relative concepts of conservation create limitations in the possibility of providing accurate definitions, fixed indicators and repeatable patterns (ICOMOS, 1994; ICOMOS, 2003, art 1-2).

Every conservation experience is a unique experience because of the uniqueness of each monument. So, by placing the monument in a static

equation and having logical reasoning, it is not simply possible to identify that while conserving a monument, the aesthetic values were highly respected. Because Aesthetic values and Possibility and concept of respect, are concepts that may be different from a culture to another one. They have the ability to change their shape and content at any place or time (ICOMOS, 1994). Similarly, it is also important to determine how much protective intervention performed on an object has damaged its originality or how successful it has been in maintaining it. Because in this case judgment is about the extent of a truth and judging the facts is something that is likely to be wrong (Mohammadi Asl, 2018, 74).

In order to reduce the probability of errors in judgments about the success rate and scientific validity of interventions performed on a historical monument, it is necessary to improve the reliability of the analysis, interpretation and judgment. Accordingly, the present study seeks to find answers to the following questions in order to achieve an approach to increase the scientific validity of the evaluation process and its results regarding protective interventions performed on historical monuments:

1. What are the components affecting the reliability of qualitative evaluations of conservation interventions performed on historical monuments?
2. How can these components be used in developing an approach to increase the validity of the process of evaluating conservation interventions and applying it to a monument (Case study: Khajeh Atabak tomb in Kerman)?

Research background

Since the 19th century, due to the transformation of the needs and, norms of societies and the views of conservationists and theorists, conservation and the relevant subjects have become more complicated and broader in their process towards the future. However, research in heritage assessment methodology and judgment on conservation decisions and measures

is a new problem that has been expanded in this area since 1999 (Zancheti, 2011). Evidence of scientific efforts to provide theoretical patterns in the evaluation and management of protective measures can be searched in studies published by research institutes and international institutions such as UNESCO, ICOMOS and ICCROM, Getty Institute, etc. (UNESCO, 2005; ICCROM, 2018; Mason, 2002; Feilden & Jukilehto, 1998). Although no integrated research has been conducted on qualitative evaluation methods of interventions on a historical monument, among the limited references in the field of conservation assessment methodology, the studies conducted by Zancheti and Michalski are highly valid. In their research, they have tried to explain a number of criteria by using a general approach and using a combination of qualitative and quantitative methods to judge the acceptability of conservation interventions regarding the historical sites. They have also tried to show the results of evaluation quantitatively based on the related criteria in order to prove the ability of the criteria to measure interventions (Michalski, 1994; Zancheti, 2011). While examining appropriate tools for sharing decisions for object protection, Michalski tried to introduce indicators such as material damage and visual integrity of the work to prioritize treatment alternatives (ICCROM, 2018, 183). Zancheti, following indicators to measure sustainable conservation in historical environments, has tried to measure the three qualitative indicators of integrity, originality and importance of the monuments quantitatively (Zancheti, 2011).

Research methodology

In this applied research, in the first stage, the components affecting the reliability of the evaluation have been extracted from the texts and conservation charters using documentary studies and descriptive analysis. After that, by logical reasoning method and qualitative analysis of components, a model has been developed to increase the validity of the evaluation of interventions. In the second stage, it

has been attempted to evaluate the quality of two conservation interventions in the sample historical monument based on the presented model for this purpose, the monument's identified values and conservationist priorities and objectives at the time of intervention were provided to local conservationists with a deep semi-structured interview. After completing the questionnaires, the results were analyzed qualitatively and presented with logical reasoning.

Assignment of evaluation competence

Measurement of conservation interventions is a qualitative issue. Interventions that the conservator has made on the monument and have led to the maintenance, elimination, or change of evidence, layers, or meanings of the object may seem competent, justified, respectful and even commendable from a person's point of view and may seem negligent and inappropriate from another perspective. The impact of differences in views, customary knowledge and experience of those who judge conservation is inevitable in valuation and decision-making, just like applying conservator tastes to prioritization and choosing treatment methods in any conservation treatment (Munoz Vinas, 2018, 79).

As Flake has said, what is important in a qualitative assessment is to pay attention to the validity of interpretations (Abbaszadeh, 2012). In an intervention (A) assessment program, these mental perceptions and interpretations are evaluators that dominate the entire evaluation process. Because he judges the subject based on subjective interpretations and the results of the assessment depends on his conclusions. However, the characteristics of a phenomenon are not equally recognizable and received by everyone and an object for different people can contain different meanings (Mason & Avrami, 2000). Therefore, paying attention to the validity of the evaluator (his perceptual foundations and taste), is necessary to increase the confidence of accuracy in judgment

and reduce structural errors that lead to invalid results. In order for the evaluator’s understanding (interpreting interventions) to be consistent with reality, the evaluator should have the knowledge of conservation, because the content of a speech can be understood by someone who has a mind ready to understand it (Falamaki, 2012, 387). According to Avrami: Judging the good or bad of the heritage conservation is up to the people whose lives are influenced by heritage or its meanings (Avrami & De La Torre, 2000). People refer to the culture and the monument relevant context and belong to the same culture. The quality of the evaluation of meanings in one monument or in one place depends on the underlying and adaptive knowledge and understanding of the subject and period (Bond & Worthing, 2016, 108), therefore, the more familiarity with the work itself and the general themes in heritage protection, the more widely the problem will be addressed (ICOMOS, 2013) and thus the possibility of structural errors in the assessment will be reduced. Whenever, the issue of technical and professional issues in protection is discussed, the protection specialist has the right to assess and judge. Because he can see beyond the axioms (Munoz Vinas, 2018, 155); He has the technical

knowledge, insight and caution to preserve the work and its set of physical, historical and artistic facts. He knows the strategies of treatment measures and the limitations of the problem.

Limiting approaches in evaluation

Undoubtedly, those whose competence in judgment has been approved have different opinions on conservation decisions that are influenced by intellectual tendencies and knowledge conservation approaches in different periods. A group of them are stubbornly in favor of traditional approaches to classical conservation and their most important criterion for verifying the accuracy of interventions is the level of conformity of the intervention and its outcome with the material or historical truth of the monument. Another group supports novel perspectives and considers maintaining the aesthetic and historical existence of the building as the criterion for their decision-making and a group seeks to compare the quality of intervention with the themes of sustainable, value-oriented and people-based conservation in the contemporary era (Table 1). Interestingly, even if the views are similar, the indicator of honesty, knowledge and ability to interpret facts is not aligned in them. In addition,

Table 1. Main trends and approaches in the three ages of conservation. Source: authors.

Ages	Trends & Approaches
Classic Conservation	Monument maintenance (ICCROM, 2018)
Modern Conservation (classic theory)	<ul style="list-style-type: none"> -Looking at the modern and commemorative values of the monument (Based on Rigel’s point of view) -Emphasizing on preserving and strengthening the truth of monument and its intrinsic values (historical and aesthetic truth of monument) -Rediscovering and display (presentation) the theme or original text of the monument -Emphasizing on accurate historical reads and preservation of originality of the monument with a focus on materials (Based on argan and brandy’s point of view) (Jokilehto, 2008; Munoz Vinas, 2018)
Contemporary Conservation (contemporary theory)	<ul style="list-style-type: none"> -Preserving the mental values of the monument and the meanings attributed to it (Avrami & De La Torre, 2000) -Assigning responsibility for valuation, prioritization and defense of values to the beneficiaries and shareholders of the monument (Mason & Avrami, 2000) -Agreed (participatory) conservation instead of imposed conservation -Searching for common feelings, considerate decisions and wise actions -Obtaining the highest satisfaction for most people by strengthening the communication functions of the monument (Munoz Vinas, 2018)

the judgmental states fluctuate uncontrollably, from stubborn to soft and flexible practices (Henderson & Waller, 2016).

Following the above points, in developing the framework and content of a program to evaluate the intervention, it should be determined which main themes and conservation approaches have been considered: classical conservation, modern conservation, or contemporary conservation. This action is effective in controlling the evaluator's view and creating the unity of approach among a set of evaluators (intervention interpreters). One of the good strategies for optimizing evaluation is limiting the evaluation fields and breaking the subject into smaller issues, which as one of the most common techniques in other sciences, can also be used to improve the nature of judgment about conservation (Caple, 2000, 10).

Evaluator's awareness of the particular characteristics of the monument and the conservation process

Recognition of the values of a monument and its meanings is a key theme in contemporary conservation (Zancheti, 2011). According to De la Torre: These values are attributed, not intrinsic; mutable, not static; multiple and often incommensurable or in conflict – can challenge established conservation principles (De La Torre, 2013, 159). So the evaluator's awareness of the values and meanings attributed to the work (by the conservator) is an important factor in his arbitration process. Here at the judging process will start by the evaluator. In this case, judging process involves a value judgment (Reedy, 2010). Therefore, in order to avoid structural errors in understanding the problem and increasing the accuracy and validity of the assessment, the evaluator must know exactly what values are preserved or destroyed in the monument, so that he can prepare his mind for the process of interpretation, judgment and evaluation. Another essential factor when evaluating interventions is the awareness of the accuracy of the conservationist's opinion in the selection of

treatment alternatives. Awareness of the conditions that have overshadowed the reason for the selection of treatment alternatives and conservation measures at the time of interventions, decision-making, i.e. the set of cultural, social, economic, political, etc. restrictions in the environment of the object, will make arbitration more reliable and the validity of the evaluator's comments will increase. Because protective interventions are actually decisions that have been made after recognition and data analysis and then judging them (Zancheti, 2011, 159). Referring to sources that inform the evaluator of the special conditions of the work will lead him to provide more informed interpretations. These sources make the understanding of subjects reliable and true and create a more powerful image of the work in his mind (Henderson & Waller, 2016).

Determining the criteria

Each intervention should respect the conceptual, technical and historical values of the original or older status of the structure as much as possible and keep its documents so that they can be recognized in the future (ICOMOS, 2003, art 3-12). Besides, in particular, in the case of a building, it holds a physical body in such a way that no conventional force can put the structure out of equilibrium (Falamaki, 2016, 46) and its structural integrity. In order to assess and explain the acceptability of conservation interventions, we need criteria to measure the quality of intervention. The more these criteria are connected to more reliable sources, the higher the reliability of the assessment will be. The accepted conservation principles in international societies that can be reread from international charters are reliable sources in determining these criteria. For example, in accordance to the guidelines provided for conservation measures in the Charter of Athens, Venice and Deed Nara, considering the preservation of the originality of the work is one of the accepted criteria for good conservation intervention.

Maintaining integrity, identity and reliability is one of the indicators of maintaining authenticity in monument (CIAM, 1933; ICOMOS, 1964). Although the process of understanding them is a qualitative issue, it is possible by those whose competence in the assessment has been approved. In international documents and charters, some ethical-technical principles have been considered to support the monument against forced losses caused by interventions (Munoz Vinas, 2018, 140) as well as control and guidance of protective measures. Some of these precautionary principles have already been approved and used by Zancheti and Michalski as a measure of assessment and judgment on conservation decision-making (Zancheti, 2011).

The five principles of authenticity, integrity, legibility, minimum intervention and reversibility are ethical and technical principles that contemporary conservation also adheres to in many cases and continues to support them in accordance with their views (Munoz Vinas, 2018, 158). Paying attention to these principles during intervention helps to move the material and immaterial content of

the work (its values and meanings) more cautiously into the future (Tables 2 & 3).

Collaborative understanding of the monument

Using the Collaborative Understanding of the monument Model (ICCROM, 2018, 195) when making decisions and interpreting decisions can lead to a greater understanding of the object and related issues by limiting the application of individual tastes in both areas. Therefore, the results of the interpretation and the results of the arbitration are directed towards greater accuracy and credibility.

Developing an evaluation program and applying to the case study

Based on the discussions about identifying the qualitative variables affecting the evaluation process of conservation interventions and factors affecting the sub-validity of the evaluation results and selecting precautionary principles as reliable criteria in the evaluation, this study designed and proposed a model for conducting a valid assessment of the quality of conservation interventions (Fig. 1) to evaluate the possibility of

Table 2. A study of the position of five precautionary principles in international heritage conservation charters and statements. Source: authors.

Precautionary Principles (Criteria)	Supporting Reference	Evaluation Indicators
Integrity	Athens Charter (1933): article 5 Venice Charter (1964): article 5, 9, 12	Preserving the shape, visual and structural integrity of the object
Authenticity	Athens Charter (1933): article 2, 6, 7 Venice Charter (1964): article 9, 11, 13 Nara Document (1994)	Preserving the integrity, identity and document of the object
Legibility	Athens Charter (1933): article 2, 4, 7 Venice Charter (1964): article 12, 13	Recognizability of the attached, replaced and new materials in the object
Minimum Intervention	Venice Charter (1964): article 13 Burra Charter (2013): article 8	Performing minimum physical intervention on the object, trying to prevent changes and distortion of documents related to the body
Reversibility	ICCROM (1998) Burra charter (2013): article 15 ICOMOS (2003)	The ability to make changes in interventions (i.e., elimination, expansion and reversal) and non-prevention of future interventions on the monument

performing conservation interventions in Khajeh Atabak tomb.

The tomb of Khajeh Atabak (First half of the 10th century A.D.) is one of the prominent architectural monuments of the Seljuk era in Kerman. The structural and decorative building material in this building is brick. The interior and exterior facades of the building are covered with exquisite brickwork decorations of brick cutting, brick muqarnas, sealed plaster, stucco decoration and tiny blue glazed

pieces. This building has unique architectural, physical and aesthetic values in terms of structure and, construction and executive methods of brick and gypsum motifs. In 2007, under the supervision of Kerman Cultural Heritage Organization, some conservation interventions (i.e. strengthening, stabilization and restoration) were carried out on the building (Fig. 2).

As the first step of the conservation interventions evaluation program performed on this object,

Table 3. Rereading conservation principles in scientific sources of heritage conservation. Source: authors.

Precautionary Principles (Criteria)	Concepts and Definitions
Integrity	Integrity means the complete feature (http://Dictionary.Cambridge.org) and in a historical work refers to the conditions of perfection, integrity and health of the material of the work (UNESCO, 2005, 88). The main categories set for this concept are: Physical, Historical, Aesthetic and Cultural (ICOMOS, 1994), Aesthetic, Historical and Physical (Feilden, 2003, 6), Functional - Social, Structural, Visual (Jokilehto, 2006), Structural, Functional and Visual (UNESCO, 2012), Physical, Structural, Aesthetic, Artistic and Historical (Kapelozou, 2012).
Authenticity	According to the Oxford Dictionary, authenticity means reliable, authentic, original (Fowler & Fowler, 1964) and the real and original self or reliable status of a fact (Simpson & Weiner, 1989; Clavir, 2002; Stovel, 2001; Stovel, 2007). Authenticity is a multidimensional concept that can be considered in three main physical, historical and conceptual contexts (Scott, 2015). This concept can also include form and design, material and content, usage and performance, traditions and techniques, positioning, meaning and feeling and other internal and external factors (ICOMOS, 1994, art 2).
Legibility	The principle of legibility has been clearly entered into the ethics of conservation for the first time in practical methods proposed by Brandy (Jokilehto, 2008, 258). The concept of legibility in conservation means the possibility of reading the meanings of the object by its audience or the ability to express physical and semantic truths by the object itself. According to Vinas (2018): what protection seeks is not to impose truth, but to facilitate reading a work to make it understandable. If some meanings in the underlying layers are to be sacrificed for more important meanings, their selection will be one of the most important conservation challenges. For this reason, historical evidence should not be removed, destroyed or diverted from the monument and any proposed intervention should allow for the maximum possible amount of material to remain (Feilden, 2003, 6).
Minimum intervention	Minimum intervention is a key principle in any conservation experience in which protective interventions to protect the semantic and physical concepts of the work must be as minimal as possible (Clavir, 2002) and, no action should be taken on the monument except with the aim of guaranteeing its future life (Hejazi & Mehdizadeh Saradj, 2014, 14). The principle of minimum intervention may or may not be useful for protecting the substance of the object, but it helps to keep the object as it is and prevent unnecessary changes in it (Ashley-Smith, 2018). It is notable that there is no consensus standard for minimal intervention (ICOMOS, 2011).
Reversibility or re-treatability	This principle is one of the main foundations of the modern conservation (Appelbaum, 2013), which is vital for the future of the work (Appelbaum, 2010). This Conservatism will allow for other options and treatments in the future (Feilden, 2003, 6), in which case it will always be possible to replace appropriate techniques and materials in future interventions (Appelbaum, 2010; Hejazi & Mehdizadeh Saradj, 2013, 13). Vinas believes that reversibility is an advantage (score) for any protective intervention, but not at any cost (Munoz Vinas, 2018, 129); This means that it may sometimes be necessary to ignore this principle in order to preserve certain meanings and values. In any case, reversibility is one of the superior criteria in determining good protective intervention (Appelbaum, 2013).

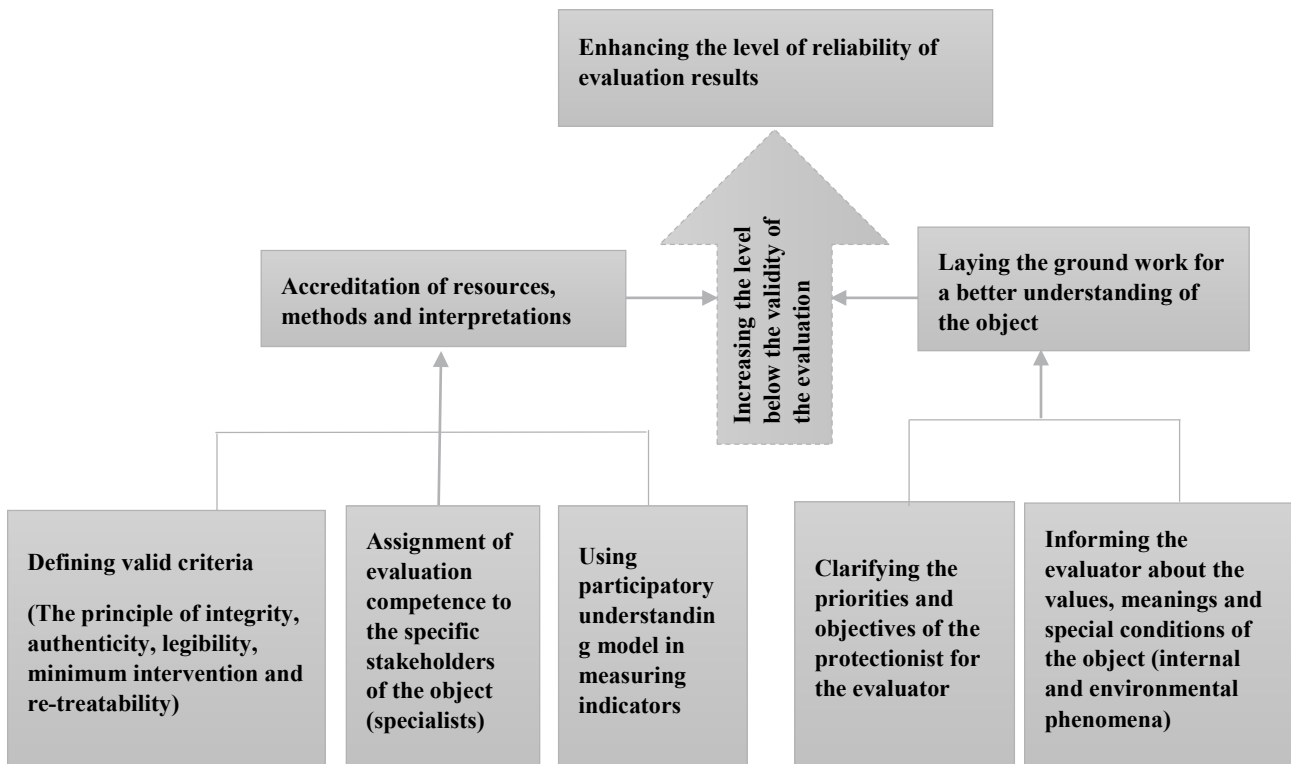
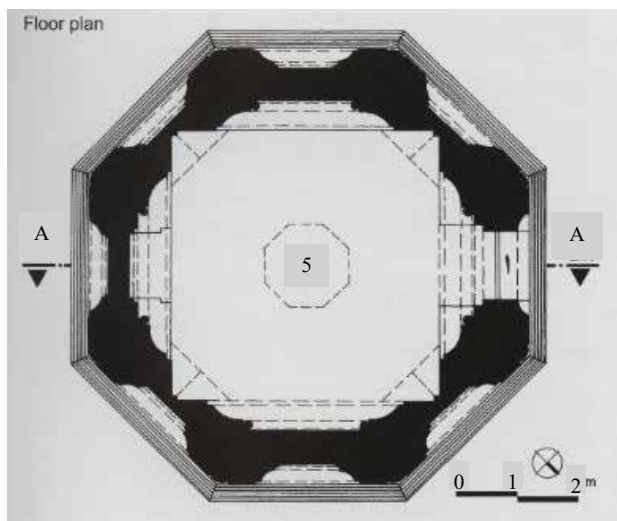


Fig. 1. Accreditation process model to evaluate interventions on a heritage monument. Source: authors.

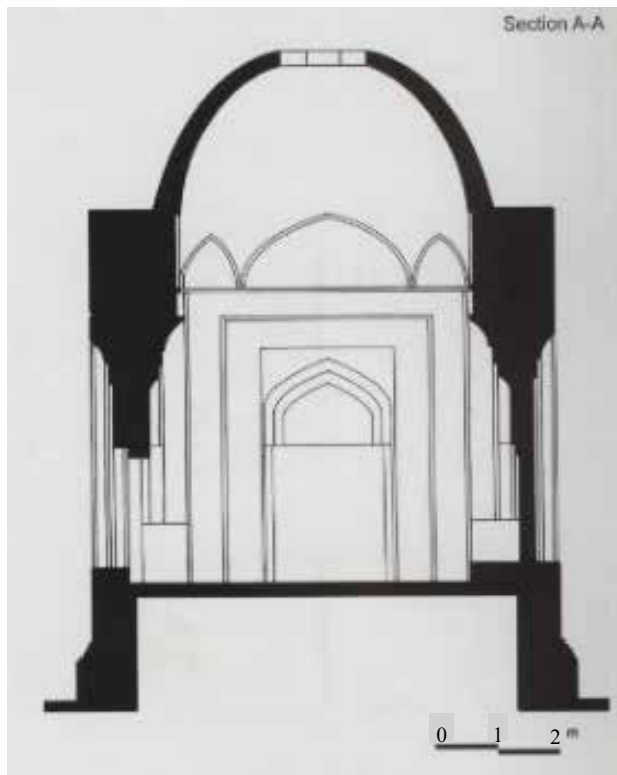
the competence of evaluation and responsibility for responding to the options considered in the checklists was assigned to an 8-member group of Kerman specialists who work as conservation specialists in the field of heritage conservation in the educational, research and executive institutions related to conservation. They also have the necessary knowledge to understand the problems and variables in architectural conservation. They know the behavior of the structure, the continuous or probable actions on the building and its tensions and the safety and persistence requirements of the building. Constantly and depending on the need, they monitor tangible environmental phenomena, such as periodic changes in the earth’s aquifer, landslide, as well as unpredictable earthquakes, the intensity and number of occurrences in the region. Based on such scientific background, the evaluator will be able to make a reliable judgment with a detailed observation of the physical condition of the building, with the help

of witnesses, his consciousness and interpretive ability and by measuring the historical- critical and experimental-qualitative information (subjectively and objectively) (Crocchi, 2017, 322). Even when it is not possible to perform quantitative analyses (rigorous scientific processes) that help with diagnosis, the evaluator can provide credible assessments about the safety of the building and the practicality of treatment measures in the structure. (For example, in this study: the success rate of cable structure performance after intervention, confronting multiple earthquakes after 2007). However, before filling out checklists and achieving the goal of increasing the evaluator’s awareness of object facts, heritage values attributed to the tomb as an effective tool in promoting the validity of assessment, was stated to the evaluator. These values were explained and formulated considering its cultural, social and historical context, (ICOMOS, 1994; ICOMOS, 2003; De La Torre,

2002) and based on Feilden's classification of values (Feilden, 2003, 6) (Table 4). In addition to limiting approaches, evaluators were asked to focus on the intellectual tendencies of conservation in contemporary times.



A



B

Fig. 2 A) Octagonal plan of the Tomb of Khajeh Atabak. B) Vertical section (A-A) of building. Source: Haji Ghasemi, 1999.

In the next step, i.e. the inspection phase of the building, the evaluators closely reviewed the building to comment on the quality of interventions and its compliance with precautionary principles based on the principle of direct observation in quality assessments of conservation (ICOMOS, 2003, art 2-7), with the help of objective evidence that plays an effective role in recognizing the effect, as well as the experience, skill and knowledge they have in determining the methodology of conservation and treatment strategy. The evaluator's views were received through a semi-structured in-depth interview and their results were transferred to checklists including the outcome of their opinions in the form of comparable quality grades (Table 5).

Survey, interpretation of comments and estimation of results

In the survey stage as the last step in the arbitration process about the acceptability of interventions, it is necessary to convert the survey results about interventions into different qualitative values for citation and comparison. Since the above results cannot be converted into numbers due to their quantitative nature, it is necessary to be in a range of qualitative degrees.

For this purpose, four qualitative degrees (excellent, very good, good, medium and weak) were considered and a checklist was considered according to Table 6 to record the evaluation results. For qualitative grading of the survey results and their statistical analysis, due to the relativity of the subjects, by harvesting Michalski and Rossi scoring techniques in 2001 for voting and comparing options (ICCROM, 2018, 183), scores of 0 to 4 have been used to match the judgments with the numbers each representing a qualitative degree. The grades intended for each option are as follows: for an excellent grade number 4, for very good number 3, for good number 2, average number 1 and finally for poor degree number zero is considered.

Although equivalent numbers can be used from the

Table 4. Classification of heritage values in Tomb of Khajeh Atabak. Source: authors.

Classification of Values	The Case Study Monument's Values
Cultural Values	<ul style="list-style-type: none"> - Original and authentic document of Seljuk monumental architecture and mausoleum in Iran and Kerman - One of the few and early examples of using Magheli brickwork art and glazed pottery in Iran - The 1,000-year historical value and a document on historical events during the Seljuk era of Kerman, especially in the case of Khajeh Atabak - The 1,000-year historical value and a document on historical events during the Seljuk era of Kerman, especially in the case of Khajeh Atabak - Aesthetic values of decorations, especially the inscriptions of the floriated Kufic script as well as the altar stone and its motifs - Special form of burial in Islamic culture and the type of burial place and tomb
Emotional Values	<ul style="list-style-type: none"> - Emotional features of tomb decorations including its unique Kufic script and stucco decoration as well as its valuable altar stone -The 900-year history of the building and its passage through a millennium of historical hazards -The reputation of Khajeh Atabak and his actions during the Seljuk era -Seljuk architectural symbol in Kerman
Use Values	<ul style="list-style-type: none"> -A source of heritage to attract tourists and economic income for Kerman city -Increasing the validity of the historical context and its value and returning local residents to the old texture - An opportunity to transfer architectural knowledge and related decorations to students and researchers

Tables 5. Conservator priorities and objectives when intervening. Source: authors.

Intervention	Conservator Priorities & Objectives
Intervention (A): Reinforcement and hooping of the dome with a cable designed structure	<p>The main and old hooping of the dome, as an octagonal wooden wrap around the dome and above the walls, is located inside the core of the wall, which its connections are disintegrated. For three reasons, the conservationist has decided to implement a new hooping with new materials and technology around it, helping to maintain and sustain the structural integrity of the building</p> <p>The first reason: pulling out and replacing and even strengthening the main containment required a lot of physical intervention (A)t the top of the walls of the building, which ultimately led to changes in the structure as well as original decorations that have high artistic value</p> <p>Second reason: The upper part of the wall in the exterior of the building was related to the protective proceedings 50 years ago and due to its much lower physical value, it has the capability to be replaced than other main parts of the building and is a suitable platform for the new hooping to be implemented from the outside and completely reversible on it. However, physical intervention is not very low and the upper part of the exterior has been replaced with new materials</p> <p>Physical values are much more priority than cultural and use values and among the physical sections, unique decorations on the interior and exterior façade are the most important parts. For this reason, only in the corners of the monument and due to the principle of legibility, the hooping is displayed and is hidden under the upper view due to the observance of visual integrity in other parts.</p> <p>Third reason: Since in historical architectural structures, on the one hand, it is not possible to accurately calculate forces and always consider reliable averages and on the other hand, conservation theories always emphasize the minimum intervention in the structure of monuments, it is practically impossible to quantitatively determine the success rate of structural measures. Therefore, a structure has been selected that can provide the experimental and qualitative minimums of resistance on the one hand and the minimum physical intervention on the other. (Fig. 3).</p>
Intervention (B): Stabilization and reconstruction of exquisite stucco decorations inside the tomb	<p>The northern wall of the building, which has been collapsed years ago and its interior decorations were completely destroyed, has been abandoned after renovation without lines and decorations. Although structurally and physically, this measure has been ensured the integrity of the building, it has affected the visual integrity of the interior and has been created a dissociation. The complete renovation of interior decorations in the northern façade, although it could guarantee visual integrity, would damage the originality, identity and unique values of the building.</p> <p>Therefore, a plain plaster, lined with the same background color as the original interior decorations of the monument (without details) has carried out on the wall. Because due to the large extent of the wall surface, it both provide visual integration and preserve the values of the age, rarity and originality of the existing decorations and do not harm their legibility. In other interior walls where decorations have been damaged at a small level, only the outlines of brick decorations and brick sealed plaster with different materials but homogeneous with the original materials are restored to preserve the integrity of the façade. (Fig. 4).</p>



A



A



B



B

Fig. 3. A & B) Intervention (A): Cable structure for controlling tensions to the vault, preventing the movement of support, improving intrinsic weakness and vertical resistance of the pier against seismic acts. Source: authors archive.

Fig. 4. A & B) Intervention (B): Improving the status of decorations and implementation of plaster and soil lined plainly on the wall after reconstruction. Source: authors archive.

Table 6. Checklist for assessing the validity of conservation interventions in tomb of Khajeh Atabak. Source: authors.

Criteria	The status of the protectionist’s attention to the criteria						
	Excellent	Very good	Good	Medium	Weak		
integrity	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>	Good <input type="checkbox"/>	Medium <input type="checkbox"/>	Weak <input type="checkbox"/>		
authenticity	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>	Good <input type="checkbox"/>	Medium <input type="checkbox"/>	Weak <input type="checkbox"/>		
legibility	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>	Good <input type="checkbox"/>	Medium <input type="checkbox"/>	Weak <input type="checkbox"/>		
Minimum intervention	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>	Good <input type="checkbox"/>	Medium <input type="checkbox"/>	Weak <input type="checkbox"/>		
Reversibility or Re-treatability	Excellent <input type="checkbox"/>	Very good <input type="checkbox"/>	Good <input type="checkbox"/>	Medium <input type="checkbox"/>	Weak <input type="checkbox"/>		

beginning instead of the above qualitative phrases, they have been used in checklists and questionnaires because the totality of the evaluation is qualitative and the phrases offer more qualitative meaning than the numbers. Finally, when analyzing the

information, the numbers are replaced. Obviously, the average final results of the survey of any number of experts will be values from zero to 20. The total scores, state, or quality of each intervention are determined for us in terms of the level of conformity

with the five criteria and provide the possibility of presenting the results of the survey with different degrees. This means that the closer the average assigned scores to 20, the higher the quality of the conservation intervention.

Finally, after applying the survey and assigning the scores to the comments and obtaining the average of them, the average results of the survey of eight experts about intervention (A) (strengthening and inhibiting the vault hooping) were 10.62 and in the case of intervention (B) (restoration of tomb decorations) showed 14.75. Therefore, it can be concluded that B intervention is more acceptable and accurate than intervention (A).

Conclusion

Previous studies on heritage conservation assessment have emphasized on different stages of protection, from decision-making stage to intervention in monument and have not judged and evaluated the interventions and have not judged and evaluated the interventions. This study attempted to focus on a reliable method for evaluating the quality of interventions occurring on a historical monument and explain its executive methods in evaluating the interventions performed on a sample object.

The findings showed that for qualitative evaluation of conservation interventions, a strategy can be used based on three components: 1. Considering the principle of participatory understanding of the work, 2. Referring to the five principles of conservation and 3. The validity level of the evaluator's awareness of the five principles and special values of the monument. The evaluator's awareness of the values and meanings of the monument, as well as the priorities and objectives of the conservationist, can help to better understand it. On the other hand, it is possible to give more credibility to analyses, interpretations and judgments by using collaborative understanding model for measuring indicators, assigning evaluation competence to experts and defining valid criteria (five principles of conservation).

A better understanding of the object on the one hand, as well as greater validity of methods, resources and interpretations, on the other hand, will ultimately lead to an increase in the level of reliability and validity of the evaluation results.

According to this principle, in order to enhance the validity of the evaluation process and obtain reliable results, the competence to comment was given to experts who dominated the general concepts of conservation and also became aware of the special conditions of the monument and its interactive relationships with its environment. The group of 8 measured the quality of precautionary principles in two different interventions based on the spectrum specified in the evaluation program, according to the frameworks set out in international charters.

Since the evaluation was qualitatively performed, five excellent, very good, good, medium and weak phrases were used to meet each criterion in each intervention. On the other hand, in order to create the possibility of analogy in two interventions and finally to create the possibility of citing the evaluation, for the above five phrases, numbers 4 to 0 were allocated, respectively.

After applying the survey and assigning the scores to expert evaluations, the average results of the survey of eight experts about intervention (A) (strengthening and vault hooping) were 10.62 and in the case of intervention (B) (restoration of tomb decorations) was 14.75.

Finally, estimating the results of the survey and converting them to qualitative degrees determined that the intervention (B) i.e. the conservation and restoration of exquisite plasterwork decorations inside the tomb has gained a higher degree of credibility than the intervention (A) that refers to the arch of the building with a cable-designed structure.

Considering that this process is organized based on the principle of data validation and methods and is designed based on the ethical-technical principles of conservation, it can be scientifically

valid in evaluating the accuracy and acceptability of interventions on a heritage monument. Besides, considering the object character and its environmental context, this strategy can be used repeatedly in evaluating different conservation interventions.

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