

Qualitative Research in Architecture Education

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ABSTRACT

Since Kuhn proclaimed the new paradigm concept in 1962, the view of the research world, especially those related to the socio-cultural fields, has changed drastically. The problem is with the field of architecture whose development history is related to the Faculty of Engineering but whose activities are more related to art and cultural meanings. This article discusses the history of the architectural education development since before it entered the higher education system and the history of the qualitative research development from the time before the concept of paradigm to the present conditions. Research is carried out with a constructive paradigm. Data were collected and analyzed from empirical studies, interpretation of research documents, and in-depth interviews with participants.

Keywords: paradigm, architecture, qualitative research.

1. INTRODUCTION

The architectural profession is one of the most ancient of all. From the time of ancient Egypt, to the time of the Roman architect Vitruvius, an architect was educated and trained in the monastery by his masters to study architecture arts and the sciences related to building.

In the 17-18th centuries a number of countries in Europe established fine arts academies to train architects alongside artists and sculptors under the guidance of their own architecture masters. The field of architecture reproduction relies on a chain of relationships between the master and pupil, architects in all countries is in the trained hands of a master. A direct link between the instructions given at school and actual practical experience is thus guaranteed.

Architecture and engineering disciplines began to separate when building engineering was determined empirically. Structural science developed in the 17th century, and engineering became a separate subject in the 18th century. The field of architecture reproduction, which previously relied on the chain of relationships between the master and pupil, has also changed. These schools also train engineers who specialize in architecture. The architect profession is divided into two specializations, namely artist-architect and engineer-architect, or civil engineer-architect. Architects build monumental buildings, and engineers specialize in utilitarian buildings [1].

The entry of the field of architecture into the higher education system obliges it to participate in producing knowledge through various studies that are considered

irrelevant to the field of architecture work, namely designing buildings and not publishing papers to increase academic symbolic capital. Researchers in architecture schools are sometimes the architects who decide not to become designers or immigrants from other disciplines that interested in architecture school activities.

Architects and academics alike are unsure how without an architect degree should attend architecture schools and be educated by scientific researchers or scientists who teach future architects. Research conducted in architecture schools also takes place more in certain sub-disciplines (environmental behavior studies as a branch of social science, lighting research as a branch of physics, engineering or physiology) and not in architecture milieu. In fact, studies on the built environment are carried out outside of schools. The only field that is explicitly the subject of architectural research is history, architectural theory and criticism [1]. The subjects of this study are closely related to the perceptions and meanings carried out by the descriptive method. Meanings cannot be measured but described by the actors of the activity and are subjective in nature, so that it can only be done qualitatively.

Qualitative research is focused on the way researchers interpret and understand the experiences of the people or communities under study and the world in which they live. The research objective is

to understand the social reality of individuals / groups and their own culture. Behaviors, perspectives, feelings and experiences that are at the core of their lives are explored using a qualitative approach that interpretes descriptively social reality and human life experiences.

Qualitative researchers find out why people behave this way, how their views and attitudes are shaped, and how do the events that occur affect them? Qualitative research questions include why and in what ways? Compare with quantitative research questions including how much, how often, to what extent?

The basic conceptual history of the term 'qualitative research' begins when medieval philosophers distinguished *qualia* (quality of things) from *quanta* (quantity) which was further followed by modern philosophy of the 17th century.

Empirical philosophers such as John Locke argued that primary qualities were considered to be independent of the value of the observer in terms of extension, quantity, and solidity, whereas secondary qualities were thought to be generated as the effects of the observer's senses related to human sensation.

New natural scientists such as Galileo and Newton pointed out that objective reality as matter in motion and wrote nature books in mathematical language. The metaphysical implication is that quantity is considered a primary quality. This has led modern philosophers to limit subjective thoughts as secondary qualities.

This new subjective / objective dichotomy places all the human experiences, sounds, sights, and smells we live in into a subjective realm.

Not all philosophers after Locke or scientists after Galileo and Newton, were satisfied with the division of the world into 'objective' primary qualities (which can be studied scientifically) and 'subjective' secondary qualities. Writing *Theory of Colors* in 1810, Goethe argued that while color is so associated with human experience that it is unreasonably reduced to its first quality, this does not mean that it is less important to be accepted as a systematic scientific study.

For Goethe, an understanding of color is very detrimental to Goethe's opinion that our understanding of color is very sad when it comes to Newtonian mechanical optics term [3].

The term 'qualitative' was actually used widely by 1900, but only in natural sciences such as chemistry. The term also appeared in an early psychological paper in the psychology journal. These texts belong to the psychology of perception and approach physiology which is called 'psychophysiology' [4].

The qualitative research method approach was started in 1922 by social anthropologist Malinowski who researched the 'Kula Ring' as a system of ceremonial exchange carried out in the Milne Bay Province of Papua New Guinea [1] and Mead in 1935 who examined the

'Sex and Temperament in Three Primitive Societies' [6] and sociologists Park and Burgess who edited the book of 'The City' in 1925 which was a lengthy study related to the city of Chicago [7]. During the period 1900-1945 which is called the traditional period of qualitative research, qualitative data analysis is aimed at a more or less objective picture of social phenomena in other societies or cultures.

Although in the early 20th century the term 'qualitative' was closely related to natural disciplines such as chemistry, physiology, and psychology of perception, it was hardly used in the social sciences. The 1970s saw a major boom in qualitative research in human and social sciences, which is seen not only in the output of research publications using qualitative methods, but especially in the many methodology books published annually. Qualitative research became important after 1970 with the presence of new social complexity and multi-perspective dynamics, which cannot be interpreted using quantitative methods.

Several decades earlier, the social science community as a whole felt that their knowledge was considered inferior as having no accuracy, without legal characteristics, not value-free, not rigor, that applies to 'real science' in this case natural science.

These researchers suffer from an inferior complex where other researchers work with statistical methods, surveys, or quantitative data analysis. This is because

qualitative sociology has been seen by social science researchers as the opposite of the principles of 'real science'.

In the middle of the 20th century, qualitative research relied heavily on positivistic research methods, images of human behavior and general functionalist theoretical foundations. Qualitative researchers are seen as unscientific because they are only the result of subjective exploration. Qualitative research is only referred to as political criticism or interpretation and is not called theory [8].

Prior to that in the 19th to 20th centuries, social and behavioral research was carried out using the traditional quantitative approach. This research is based on the positivist paradigm and natural sciences. Positivism is a scientific approach that is based on belief in universal law with the principles of objectivity and neutrality using theory and hypothesis testing.

Natural methods, especially physics, originated in the 17th, 18th, and 19th centuries. As the conceptor of the terms 'positivism' and 'psychology', Comte (1798-1857) saw that the research methods of the natural sciences should be adopted by social science research. He assumed that there were laws as applicable to the development of the human species as the law of falling stones [9].

The search for objectivity and the existence of a distance between the researcher and the one under study to

avoid bias is one of the characteristics of positivism. Positivism researchers believe that laws and rules are universal or generalizations such as laws that occur in human action, looking for patterns and order. Findings were generalized to all situations with similar treatment, and behavior was predictable. They think that the core of research is considered value-free and objective when using numerical measurement, statistical analysis, and search for cause and effect. With a positivistic approach, the researcher controls the framework of theoretical, sampling, and research structure, through the search for causal relationships with a focus on prediction and control.

The positivist approach begins with a theoretical framework and hypotheses made before research begins with deductive logic, moving from the general to the particular, with the main objective of testing theory. The social world is perceived as an object.

For logical positivism, the process of induction through observation is the principle of the formation of knowledge or knowledge. This induction process is also the basis for creating general and absolute laws based on the criteria of meaningfulness and meaninglessness.

The truth of a general theory can be determined and proven through the principle of verification, which is to determine the meaning and meaninglessness based on the criteria of whether it can be justified empirically.

Propositions of science or knowledge are considered scientific, apart from being built on the principle of induction through experimentation or observation, also if they are seen as having the ability to explain and predict and have superior objectivity and reliability.

Researchers who conduct research with an inductive approach begin their research by collecting data relevant to the topic under study. When large amounts of data are collected, researchers then step back in order to get an overview of their data. At this stage, the researcher looks for data patterns and develops a theory that is able to explain why these patterns occur.

With an inductive approach, the researcher starts the activity through a series of observations. From this particular series of experiences the researcher turns to a series of more general propositions about those experiences. Researchers move from data to theory, or from specific things to general things.

In 1934 Popper stated that a theory or proposition of science or knowledge was proven true because it could be tested (testable) through various systematic experiments to refute it. He rejected the logical positivism view that something is scientific only because it can be proven. For Popper, if a hypothesis or a theory can stand against denial. The greater the theory's ability to survive against various attempts at denial, the stronger its existence, which he calls 'corroboration'.

For Popper, any scientific theory hypothesis is always only a conjecture, without final truth. Thus every theory is always open to be replaced by a new, more precise theory. A provisional hypothesis is said to be scientific if in principle it allows refutability. This falsification determines the demarcation between scientific and unscientific propositions or theories.

Popper was never interested in so-called meaning problems. He saw meaning as something artificial. He was only interested in the question of the meaning of demarcation as a criterion for the scientific character of a theory [10]. He rejected the view of inductivism which states that science always departs from observations, because according to supporters of the theory of falsification, every scientific research is guided by a certain theory that precedes it. This theory is then tested by experiments or observations. If there is a theory that does not survive, it will be declared a failure and must be replaced by other speculative theories [11].

Popper offers the idea of falsification as a determinant of demarcation between scientific and unscientific propositions or theories. According to him, an empirical proposition or theory must be seen for its potential errors. As long as a theory is able to survive in the effort of falsification, so long as that theory is still considered solid, even though its temporary characteristics never disappear.

The researcher formulates a hypothesis as according to the expected results, then tests it. Scientists falsify this hypothesis. If deviations are found, the hypothesis is considered false. Knowledge is always temporary when new data is found that can refute it.

Popper warns of the importance of looking at that among the two main ways that can be used to explain the growth of science. The first way of explaining science as a accumulation of knowledge without claiming to be the highest source of knowledge. Every source, every suggestion, is accepted and openly examined critically. The second way of explaining it is by means of a critical method that changes everything, including the instruments of formulating the language of myths and theories [12].

In 1962 Kuhn refuted Popper's view by stating that not all scientific development is based on the process of accumulation. There are phases of science that develop accumulatively, there are those that develop in a revolutionary manner which he calls a paradigm shift. For Kuhn, science experienced a paradigm shift and did not move in a linear path. Theory is relative but cannot also be falsified. If the theory is accepted by many people, it does not always mean that the theory is correct. Theory is the result of the views and

measurement capabilities of that time. Science is not strictly defined by rules.

Kuhn's view is that most trained specialist scientists try to work fully within their paradigm until the unsolved puzzle becomes an 'anomaly', then falls into a 'crisis' paradigm. After that scientists legitimately discuss the future direction of their field. When a viable alternative paradigm has been found, a scientific revolution takes place [13].

The scientific revolution arises when one new paradigm replaces another after a period of paradigm testing that occurs only after constant failure to solve important riddles has given rise to crises. This process goes hand in hand with natural selection: one theory becomes the most viable among actual. When using a new instrument and scientists seeing a different reality in the previous place as seen with the previous instrument, that's a new paradigm [14].

Kuhn defines a paradigm as a set of beliefs, values, techniques, et cetera, which are owned and shared by the community [15]. There is no research without a paradigm. The paradigm defines the worldview of the researcher as a bricolage. A paradigm includes epistemology, ontology, and methodology. The epistemological

question is how do we know the world? How is the relationship between the researcher and the one being studied? The question of ontology is what is the nature of reality? The methodological question is how do we acquire knowledge [16].

As a guide to the position of epistemology, ontology and axiology, the paradigm has a significant influence on the methodology to be used in research. Each paradigm is supported by certain assumptions. knitting epistemology, ontology, and axiology, which in turn will guide researchers towards specific methodologies.

Kuhn illustrates that two people with the same instrument see different things, and two men with different instruments can see the same thing [17]. The interpretation of reality is determined by how the observations and instruments are used. This allows researchers to see reality no longer in a single but plural form where one reality does not cancel other realities but complement and enrich the reality. Different methods of observation and instruments will produce different conclusions but both have the same truth. Each conclusion with its truth only describes a part of reality and

does not describe the true whole reality.

The Faculty of Engineering is the result of technological developments in the heyday of the new science with various technological discoveries that made it easier for human civilization. As Newtonian adherents, generally academics of the Faculty of Engineering have a scientific doctrine that truth is objective and does not depend on the equipment and value system adopted by the observer. Newtonians assumed that the universe was nothing more than a mechanical system subject to definite mathematical laws. All things can be predicted quantitatively, so that it does not leave the slightest room for qualitative considerations, including mental spirituality [18].

As a profession that is closely related to the art field but is part of the Faculty of Engineering, the types and methods of research in architecture are unique compared to other fields. If architectural research related to physics, structure and construction is carried out with a quantitative approach, then architectural research related to history, theory, criticism and behavior is carried out using a qualitative approach.

The existence of the field of architecture at the Faculty of Engineering shows that there are ambiguous or uneasy researchers about perceptions of the choices of types and research methods. This phenomenon shows that although

studies are conducted using qualitative methods, it is often found that research is carried out using a generalization approach. This article aims to find out how the research community in the Department of Architecture, Faculty of Engineering, UNHAS responds to the concept of paradigm in their research approaches and strategies.

2. RESEARCH METHOD

Research method based on constructive paradigm. The transactional / subjectivist epistemology approach to produce findings is created. Researchers and subjects are mutually connected so that research results are created literally as the research process progresses. Data collection was carried out through empirical studies, document interpretation and dialogical methods through in-depth interviews with participants who were involved as research subjects. The research was conducted in June - October 2020 at the Department of Architecture, Faculty of Engineering, UNHAS.

3. RESULT AND DISCUSSION

Research Method Lecture

The structure outline of the Research Methods course at the Department of Architecture UNHAS is divided into two demarcations, namely quantitative and qualitative [19]. Although there is a Sub-Lecture Outcome that discusses paradigm, the logical building of research methods is directed only to the communication

approach strategy of data collection and analysis, which is carried out quantitatively or qualitatively. The research method does not discuss about the ontology and epistemology that produces consequences so that research must be carried out quantitatively and not qualitatively or vice versa.

This quantitative and qualitative demarcation decided that the Sub-Lecture Outcome related to the collection and analysis of quantitative data was submitted to the Building Science Laboratory lecturers and the qualitative was submitted to the Theory and History Laboratory lecturers. The assumption used is that researchers from the Building Science Laboratory always perform data collection and analysis techniques using quantitative methods, while researchers from the Theory and History Laboratory using qualitative methods.

In fact, it is often found that students doing research in the Theory and History Laboratory carry out technique of data collection and analysis with quantitative methods. It is also common to find students who are researching in the Building Science Laboratory perform technique of data collection and analysis using a quantitative-qualitative mixed method. This quantitative and qualitative demarcation condition made it difficult to test the research results because the focus of the research was on the method of processing and analyzing data and did not

start from the ontology and epistemology chosen by the researcher.

Ontology, Epistemology, and Methodology

In carrying out their tasks, architects are always reminded that their job is to solve problems. Produce artifact products, how to make them the way you want, and how to design them. The action taken by every designer is to change the existing situation into a preferred situation [20]. Design is problem solving [21]. This condition is often interpreted by architects as those who best understand how to solve problems related to the built environment.

Architects do instinctively determine solutions to the problems they face. Ching wisely cautioned that the depth and scope of architects' design vocabulary influences their perception of a question and the formation of its answer. If one's understanding of the design language is limited, then the scope of possible solutions to a problem will also be limited [22]. In many observations, there are situations where architectural researchers position themselves to evaluate and construct what 'people' have done before them.

Also often encountered dialogue about the building of logic is scattered and not formulated consistently beforehand. As a result, ontology, epistemology, and methodology are not mutually exclusive. For example, a qualitative descriptive approach type argument but uses terms for

a quantitative approach. Other common arguments, for example, research with a positivistic paradigm but guided by the view that a theory can be true in the past, then false in the present, and true again in the future.

A research student has difficulty communicating with the promoter team of his dissertation. The student conducts research on the spatial layout of one of the built environments of a tribe that lives in a isolated area and is detached from the development system. She collected and analyzed data on how these tribes, with their own knowledge, managed the spatial layout of their built environment without government interference. The problem is that the promoter team wants data collection and analysis to be carried out by quantitative methods using spatial planning standards that are considered modern. On the other hand, students who are researching see and interpret their views as researchers who respect the uniqueness of the ethnic culture under study. Here there are differences in perspective between students and the promoter team.

As research subjects, the researched tribe is assumed by the student researchers to have the right to express their knowledge to manage their own built environment spatial planning. Therefore, the technique of data collection and analysis is carried out by qualitative methods. On the other hand, the team of promoters with their experience in

designing spatial planning based on current science feels the need to construct views of spatial management systems from the perspective of researchers using quantitative methods.

In a study with the theme of textual study of Islamic values for residential architecture, a research student has the view that as an architect who understands Islamic values better than the community studied. Researchers assume that the houses inhabited by most Muslims are designed and built with a secular approach that only considers the physical aspects of the house that are worldly. Researchers will construct a residential house design based on the study of textual translations and interpretations of the Al-Qur'an and Hadith which will interpret architectural aspects according to relevant themes for Islamic residences.

Here it is clear that the paradigm used by research student is a positivistic paradigm with inductive logic. Researchers are seen as being able to study objects without affecting or being influenced by the object. Researcher use dualist epistemology with the assumption that there is a separation of the researcher and the object under study is a separate entity. This researcher positions himself as the advisor to policy-makers and change agents who know best what to do.

The positivistic paradigm is one of the paradigms that have been criticized by researchers because it is considered inadequate to answer issues of ethical, emic, nomothetic, and idiographic dimensions that surround research. Too many local and

contextual meanings are ignored by the generalizing positivistic paradigm [23].

In a research with the topic of constructing local wisdom values of traditional architecture of a tribe in South Sulawesi, a research student used a paradigm which he called a natural paradigm with a phenomenological approach. Researcher rely on the ability of the community being studied which is intangible with multiple realities. The data collected is emic and sourced from the people studied.

The problem in data collection is mentioned as data with an emic perspective but is interpreted as a sample. The sample is a manifestation of generalization where the sample method is considered to represent a population. The emic approach, on the other hand, is carried out because it considers each data to represent itself out of respect for uniqueness. Using an emic perspective with an etic approach. There seems to be a contradiction between the paradigms adopted which is called the natural paradigm, the collection of emic data with the selected sampling technique.

4. CONCLUSION

There is no neutral form of measurement, because it is realized that all objects of observation, including the observer, are related to other objects. Therefore, there is no longer a single reality because reality is determined by the context of the observer, the instrument of

treatment, and the background of the observer and the observed.

The facts show that architects often assume that they are people who know what is necessary for a good built environment. They see reality using glasses and ignore the views of the people who do the activities. But there is an awareness that no one is more vigilant if the community of actors themselves and they have the right to judge according to the point of view and meaning that does not believe, then their views must be part of what is interpreted as a good built environment. In research on meanings, dialogue is needed between the researcher and the society being studied as the owner of the meanings that exist in the community.

Architects are human beings who are part of nature and the environment. They are not human beings who are free of value in looking at humans, nature and the environment objectively. Reality is determined by the way of seeing, the instruments used, and where the reality is.

With its own reality, society treats nature and its environment. In other words, the actual way of producing knowledge is very much determined by the context of their existence when the observation of reality is made. In this way, a reproduction of new knowledge for architecture is produced. The architectural education system has no other choice but to follow the paradigm shifts that occur,

rearranging views on how to reproduce new architectural knowledge.

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