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## Middle-range Proficiency in the Professional Organization of Architecture and Building (case study: Design offices of engineer's council of Qom)

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### Abstract

The constructions of the building professional body has been a main research subject in recent two decades. In Iran, the construction industry is mostly based on an overwhelming pattern of mutual design practices where the majority of expert personals are design and construction technicians. But these human forces have always been marginalized within research discourse as well as the educational context of architecture. The study aims at clarifying the occupational position of draftspersons and construction technicians and their impact on architectural designs. The first part of the article, proposes a conceptual framework for studying status of architectural technicians from antiquity to present comparing Iran and the west. For the second part, a logical analysis of official documents is used to produce a general model of the subject. The ethnographical strategy is chosen for the third part of the research where middle-range forces of the small design practices of Qom are studied (using deep observation, deep interview, and objective questionnaire technics) to be compared with findings of previous studies and make conclusions. The results of this study show that draftsman place in its historical evolution has experienced a vast change from an expertise-based hierarchy towards societal hierarchy. The all models of the varieties of occupation patterns of building technicians around the world are summed up in four conceptual models. The difference of the models falls into directness or indirectness of the mediatory role of the technician between architectural designer and other human figures in design decision making (clients, law agents, other engineers of building and operational forces). For Iranian small design practices, official duties, integration with clients and designing of some small projects are three common roles of the technician that are not within their official defined education as well as professional place. This fact invites to a review of their education an occupational pattern.

**Keywords:** *Drafters, Architectural technician, Design media, Architectural education, Architectural practice.*

### Introduction

#### • Problem Statement

If there is a professional role called technician, it means that there would be a kind of labor

division within the field. For mechanic engineers' job, technicians' duty is roughly to fill the gap between the designers and construction forces. In mechanical engineering, technicians would fill the gap between the designers and workmen. It is also true for civil engineering and technicians as

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middle-range site spectators have relatively defined job position. This stable condition could not be stated for architectural practice because in modernity (since Renaissance era) there has been a great gap between design and construction where the two field emerged as completely separated so the architectural technician could not simply be viewed as an executive force of site work compared with other engineering practices. Emil Durkheim as a protagonist of social work division against Marxists' trend in the 19th century said: "Indeed we know that the more work is divided up, the higher the production... It is the need for happiness that may make the individual to specialize?? more and more" (Durkheim, 1984: 179-180). Antoni Giddens who is known as the last modernist social theorist talks of social work division based on community classes or specialists' duty as being the basis for modern industries that have extended its dimensions through globalization and intensified not only professionally but also geographically (Giddens, 1991: 75-6). For the profession of architectural design, the question is that whether the need for technicians is a result of technological progress (as other engineering fields) or it is an innate human requirement as what Durkheim mentioned. If the first is true then it would be expectable to be a promotion for this job during current globalization. But if the second assumption is true then there would be serious questions about its progress or continuity. Davis (2006: 100) describes that the contemporary culture of the profession of architecture is based on bureaucratic management tools within which the role of everyone is strictly defined (Although there could be exceptions- see for example Rubeling, 2007:3 and Benevolo, 1998: 32- the recent has an enlightening, see his note about famous modernist designer Arne Jacobson). So to make a clear description of the main problem of studying architectural technicians under the light of the labor division of the design profession requires to study the history of architecture.

There are many anecdotes on the job conditions draftsmen amongst professional community as well as the public. However, our extensive searches show no scientific study on the societal status of these

people within the professional body of architecture in Iran. there are some comments such as draftspersons are not so efficient in their works or they have no sufficient motivations for their job or the weakness in their professional status. Thses comments should be considered as are some of these untested hypothesis' that their validity should be evaluated experimentally. This is a prerequisite for any planning for the future of draftspersons. Another rationale for carrying out this study is to understand the role of middle-range as well as small design offices in shaping our general built environment, especially in Iran. For instance, throughout an extensive known textbook about the architectural professional practice of Iran written by Kermanian (2009), there is no points or comments on the architectural practices of this group . While research efforts are concentrated on large architectural corporations, the impacts of small design offices are many times stronger than large practices and town municipal institutions. It is, in turn, another contribution of our study. The specific problem of this study is firstly to define the concept of architectural technician (draftsperson) through historical genealogy of this professional position and then monitoring its contemporary condition as a marginalized subject within literature, so that it would be possible to make proper decisions about the future of this particle members of the body of the construction industry. So the first part of the article is specified for the historical study of the concept and the second part deals with the current professional status of draftsmen upon their contribution in producing of architectural media. In the third part, the inquiry was conducted on the members of the Council of Construction Engineering of the province of Qom are

### **The history of draftsmen status within the profession of building design and construction**

There should be a clear definition of the "architectural technician" to make a clear inquiry of its position within the profession throughout history. It means that there should be a clear difference between it and other similar job titles such as "building inspector", "intern" or "workman" to put it within the domain of "architectural design". So the definition depends on

the architectural labor division that in turn refers to the possibility of distinguishing between architecture as a construction work and architecture as a design activity. It becomes possible if the design is made before construction phase and this, in turn, means that there should be a kind of media for “introduction” of the architectural design other than the building itself. This media is in most cases the drafting (besides rare cases of small models). Kostof (1977: v) implies that the existence of a profession called as architecture throughout the history has been driven by some degree of complexity in the design of the building that necessitated pre-construction designing.

### **The draftsman through the history of western architecture**

There is some evidence from Mesopotamia and Akad about drafting (Zarei, 2010: 19); but it is in ancient Egypt that historical documents show it has been led to labor division within the architectural profession. From arguments of Kostof about Egypt and Greece it can be concluded that Egyptian construction institution included job position equivalent to secondary architect or draftsman, but in ancient Greek construction system there was a stage of internship that could be interpreted as “construction technician” (not architectural drafter- see Kostof, 1977a: 21) who after passing professional steps became “architectural designer”. It has been suggested in historical reports of Delphi (4th B.C.) where some interns had been working for the master architect (called “hyparchitekton”). But the report is unclear about their contribution in the design process while it describes their work as supervising of stones installation (Ibid: 25). There is a clear difference between the two job position in Greece and Egypt not only from the social status point of view but also from professional hierarchy through which the Greek technicians could never reach to the high status of master architect. The study of McDonald (1977: 28) refers to some Roman mosaics of Roman architects and their assistants etching stone columns together. So the

work of such a technician may not be related to design activity. If we are to find certain evidence of existing any activity qualified as design for such Roman technicians we could refer to an old report from Constantine the Great era (A.D.306-37). There has been said that in African states some required youths of the age of about 18 were invited to be educated for the design and construction of many buildings of new capital (Ibid). Kostof (1977b) believes that there were a large number of pre-construction works of design during medieval and Gothic era: from main technical drawings to early sketches of the architects for himself and construction drawings for transferring data of design to masons. There were also drawings of real scale for geometric shapes that some of them are discovered. Upon this large amount of design works along with the fact that these architects had numerous assistants (Ibid: 93) it could be claimed that draftsmen works were of high importance during the period. The detachment of architect designer from construction work-force that was the ideological target of Alberti’s theory made it necessary during Renaissance to use some kind of technician to handle the relationship between artist-architect and a mechanical job of construction. This was crystallized in works of some architects such as Palladio and Alessi. Wilkinson’s account of Renaissance professional body of architecture brings at least two types of architectural assistantship about that could be equivalent to work state of current draft persons (Wilkinson, 1977: 127): the first one was technicians who worked at architect’s atelier (for example the office of Antonio da Sangallo) and the second type included those who worked for busy architects as Alessi. In this case, he only drew primary sketches and it was the duty of his assistants to conduct the detailed design and supervise the construction process. In the French system of architecture, there was a job position called inspector who were subordinate to royal master architects. Their duty was to draft, organize the details and supervise the construction process (Rosenfeld, 1977). It may

be in England of Industrial Revolution that for the first time such an independent organization as draftsmen's guild emerged (Wilton-Ely, 1977). One part of their special skill was an efficiency to do very rich rendered drawings. It was somehow because of a new generation of clients of architecture who were transformed from intellectual art-lovers of renaissance to almost ordinary-minded persons of civil councils who were responsible for grand town projects. They needed to be persuaded about any artistic decisions of architects because they had no common language with architects.; so it would be often possible that the presented quality of these drawings be very different from their built realization (Ibid). It would be pursued in practical trend of American architect –Frank Lloyd Wright– who wanted a draftsman called Heinrich Klumb to make for him pen and ink drawings of his previous buildings that becomes the focal points of his mobile exhibitions throughout 1930 (Pfeiffer, 1994: 66). Women architectural occupancy reveal during the early modernist era was mostly in such a job position as drafters (Cardoso, 2017) who were not necessarily paid for their works. It was true even for an exceptional celebrated female architect like Julia Morgan (Cline, 2017: 184). Ignoring the need for change in the educational process of architecture for these drafters from masters of the architecture forced these people to make required changes by themselves . So in 1842 some fresh architects split up from RIBA and organized “Association of Architectural Draftsmen”. It then renamed as Association of Architects and their self-educating of students in line with inner group discussions were main features (Wilton-Ely, 1977). Within the American society until the late 19th century the architecture remained as a craftsmanship and there was a job position as the drafter. These technicians were in fact carpenters who acquired briefly the ability to read and making architectural drawings and so detached themselves from carpenters. They were called “mechanician” following their Greek precedents (Kostof, 1977a) and they founded the “Institute of

Mechanicians” that provided these technicians with required educational materials not only from the technical point of view but also from artistic vision by lectures and libraries (Woods, 1999: 58). The special ability of these people has encouraged HAB (Historical American Building) to employ them (Morgan, 2014: 7-8) since the 1930s to present. In summery it could be said that the professional content of architectural draftsmanship (within industrial societies) has changed due to emergence of certified engineering system and transformed from mediatory tool between design and construction to the one locates between the designer and the final design so it turned to be largely off-site activity without serious relation to real construction.

### **The draftsman through the history of Iranian architecture**

It was mentioned in the previous part that there should be a kind of drawing media to originate social institute of architecture. The discussion for traditional architecture of Iran needs two consideration; firstly there is little evidence of drafting as main activity within the professional body of the pre-modern era of Iran. These facts are limited to some examples of the Ilkhanids (Willber, 1986; Quddusifar, Etesam, Habib & Panahi Barjai, 2012) or Timurids (Necipoglu, 1992). These are not enough to prove there was vast drafting activity or for all projects. What has been claimed in ancient texts as “Tarh Rizi” (Designation- see Bozorgnia, 2002, introduction) may be interpreted as a kind of necessitation of drafting. but it would not mean that there were clear distinction between designers and constructors or masons during the period. So it is impossible to claim that there was any kind of draftsman in that professional system. Such arguments mostly revolve around that the drafts of traditional architecture of Iran. The arguments show that the drafts were specified to general patterns of geometrical decoration there were also a system of pattern unit for plan drawings that every architect might use them his works. The second and more

important point is that Iranian art professionals had secrecy attitude towards their technical drawings that included not only production of drawings but also reading and performing of them to the extent that these works considered as the specific job of the master, not assistants. This was a kind of respectfulness for the master. In an ancient context of the profession – Fotovvat Name-ye Bannaian- introduces three steps within the professional body: Mozdoor (simple worker), Saheb (skilled assistant) and Ostad Banna (master mason – see Khan Mohammadi, 1992). The distinction between them was achieved through practical proficiency in construction, not design. So it could not be possible to account such an internship as “technician of design” (or draftsman). In addition, studies show that traditional master builders had special ability in detailed constructional and decorative technics (Bozorgnia, 2002, introduction) so labor division – even in construction activity itself- has not merely based on the difference between skills but its basis was mostly the hierarchy of proficiency in same activities and gradation of skills. So it would be more acceptable to interpret the structure of the architectural profession of the traditional era as a “vertical labor division” not a lateral one. Although there are no interpretative notions about architectural design activity throughout historical contexts, it is possible to say that the job of Tarh Rizi (designation) was the most important phase of the work of master architect that has sometimes been attributed to kings and prime ministers. For example designation of Kushk No is claimed to be the work of Sultan Masood Ghaznavi (Ibid) in Ghaznein and Rab’a Rashidi to Rashidoddin Fazlollah who was prime minister of some Ilkhanids (Quddusifar, Etesam, Habib & Panahi Barjai, 2012). This fact to some extent eliminates the possibility of works of draftsmen in the process of design. The only equivalent to design technicians might be apprentices who worked for the master to receive his instructions. For these people, Necipoglu quotes from an English passenger of Ghajar era that shows an activity very close to draftsmanship (Ibid).

but it is problematic to generalize this fact for all traditional time because the professional atmosphere of the Qajar era was to some extent affected by western modes of work (Bozorgnia, 2002: 260). Upon description of one of traditional masters of our times – Asghar Sha’rBaf- about educational content that he received traditionally from his father (Ghadiri, 1996) it could be understood that the only person who allowed to contribute to drawing process (in its traditional manner that limited mainly to decorative drafts) was the most trusted one who perceived to fill the position of the master afterwards. In order to explain the concept of “technician” in the architecture of the contemporary era, one should pay attention to the dichotomy in the structure of the architectural profession of Iran during the modernization period (gradually begun from the Qajar period and compelled from the era of Reza Shah). In the traditional era, the upper and lower ranked jobs in the profession were of a single type and a single professional institution, and therefore the “hierarchy” of specialties ranged from simple to complex while the theoretical part was only provided by architects; however, the coordination between the system of practice and theory was undeniable, and the professional labor division was definable based on the “reduction of the degrees of knowledge” from the point of view of practicality and “the reduction of the degrees of practical skill” from subtle skill to heavy ones. But in the new era, academy-based architects (along with civil engineers) were fed an “external” institutional and technological system, but their intellectual effect had to be realized in the Iranian environment where the social and technological structure vastly reminded traditional. If their institution had a special theoretical and practical content, the institution of traditional architects and professors also had its own content. Academic architects’ attitude (i.e. their reliance on paper design) and the pragmatism of the traditional masters, along with the great adaptability of the these designers (Ghadiri, 1994: 13-14) and these architecture (which has led to its survival through

thousands of years around the world - See Salingaros, 2007), created a kind of new labor division in the profession that is not similar to the Western example. In fact, if the normal role of the architect technician is defined to manage the relationship between the architect and other co-workers in design process. This group are essentially unaware of the design. The first real technicians in Iranian architecture should be the traditional masters at the beginning of the arrival of the modern educated architects in the community of design and construction of Iran: a process that began in the middle of the Qajar period and continues until the end of the second half of Pahlavi the second. Educated architects, not only did not have a common language with traditional master builders in building techniques but also because of their reliance on the paper drawings, they also had difficulty in communicating with constructional forces (Pishva Yazdi, 2011); but in the case of traditional masters, the subject was almost reversed; in fact, they easily occupied this middle position using the vacant space available between architects and executive agents, based on their past knowledge and abilities, as well as superb flexibility. An early example of this phenomena is career of Ostad Lorazadeh (a famous traditional master architect of contemporary era -see Soltanzadeh, 2004); Another traditional master architect, Ostad Mohammad Pishva Yazdi, also learned to read and execute modern drafting through the lessons of geometry at school during the Reza Shah era And through this, in many modern projects, he was used as an assistant of foreign architects (Pishva Yazdi, 2011). By contrast, the community of educated architects did not pay much attention to this requirement within professional body for such mediatory works: in the "Report of the Committee on Architecture and Urbanism, the Department for the Study of the Issues of Iran in the Light of the Shah's and the Nation's Revolution" (1977: 65) pointed out that a fundamental problem in the structure the profession that has prevented the pursuit of the desired activity of educated architects at the community level has been a lack of "technicians."

But what is the current situation, and especially the future of this job, will be discussed in future section

### **The current state of the technicians of architecture (draftspersons)**

There are two curriculum program for draftspersons in Iran (Council for Educational Planning and Academic Curriculum, 2005: 2; High Council for Planning of the Ministry of Culture and Higher Education, 1995). Despite the differences between the two existing educational curricula of draftsmen (And will be dealt with in the next section), in both, the draftsperson will enter the profession for two completely different roles: helping the architect to design and build a bridge between the designer and the non-specialists. The first role locates in the hierarchy of idea-to-product (after problem seeking until problem-solving) so is inner to the architectural body, but the second role is placed within the hierarchy of communication of "architectural institution" with other "social institutions" (users, employers, other engineers, executive agents, etc.). The second role has been meaningful in the career hierarchy of traditional architecture, but the first role has no history in the professional system of Iran and is a matter of modern times. In this section, this question will be studied about the nature of these two tasks in the professional status of modern times (in general) and in Iran (in particular).

### **Architectural Professional Systems and the State of Intermediate Occupations**

The study of architectural practice by sociology or educational science in the past decades has more to do with the career of the architects themselves (and not the marginal ones). The works of Lawson and Donald Schon are examples of this trend; within the architecture, the subject of "profession" and "discipline" (see the Related book by Piotrowski & Williams Robinson, 2001) is a contemporary concern about the structure of the profession that has less to do with the middle-range vocations within architecture. Gutman's sociological study (1988),

who had a close experience with architects, is one of the first and exceptional examples in which the structure of communication between members of various architectural offices is socially discussed. Although it is apparent that drafting is a clear occupational task (in terms of definition, limits, and tasks), and for more than a century, people who are officially engaged in this title, but that this is not very obvious that task is a mere mechanical work. In the Career Guide provided by the Chicago Employment Research Institute: “Draftspersons can help create design documents, but their major responsibility is the creation of construction documents” (Institute for Career Research CHICAGO, 2005: 12); Upon a detailed guide for draftspersons in the United States published many times (Jefferis, Madsen & Madsen, 2011), the drafter is “ A drafter is the person who creates the drawings and details for another person’s creations. It is the drafter’s responsibility to use the proper line and lettering quality and to properly lay out the required drawings necessary to complete a

project, Such a task requires great attention to detail as the drafter draws the supervisor’s sketches”(Ibid: 3). From the point of view of this reference, there are no fundamental differences between the two job titles of drafter and the AutoCAD operator (in the case of courses, sometimes this is explicitly stated (www.bcit.ca) and the official website of the US Employment Administration Also, suggests it- (see: www.bls.gov). In Australia, and in the definition of creative businesses, architecture occupies the second place, where, according to the definition of creative businesses, the work of architectural draftspersons is only providing the medium of communication and not a creative job (Higgs & Lennon, 2014). This situation is in accordance with the five-factor standards of the National Endowment for Education, Science, Technology and the Arts. But the predicted role for technicians (helping the architectural designer to complete the design) is considered as an innovative practice (as described in their academic syllabuses of Iran) This is also true in some European professional systems (for a brief comparison Among the various professional systems from view point of the role of drafters, see Fig. 1); For example, in the Swiss system, the third task of the drafter is described as: “They have the ability to independently Solve issues related to the design process and to discuss and present their solutions” (BBT, 2009b: 1). But in the German system that the technical and technological aspect of the educational content of architectural technicians is greater, none of their responsibilities is architecturally specified with the exception of the reference to the implementation of design drafts with the principles of environmental, safety and so on. Instead, their job is introduced to the society as a “customer-oriented” service (the official website of the German technical and vocational training services: WWW.BIBB.DE/EN/27218.HTML). Similar statements have been used in describing draftsmen’s work in Austrian system (BGBl, 2007: 191). To understand what the main skills are needed by the draftsmen and more



Fig.1. Occupational status of architectural drafters in Europe  
 Red: The main function of architectural technicians is reserved by law against other professionals (usually architects and engineers). Architectural technicians cannot work as architects or engineers.  
 Yellow: there are legal barriers, but some options are still available. There are some engineering disciplines such as architectural technology that are not covered by the law [of preventing the entry of technicians into the profession].  
 Green: There is no limit and the business is quite competitive.  
 Source: <http://www.NOVA> 2012-2013 COLLEGE CATALOG PROGRAMS OF STUDY.mht

importantly, how much these skills are related to mechanical and non-design skills, it is necessary to make a better explanation of what they produce during designing phase. An important part of these products, and not all of them, are drawings. Lawson (2004) presents a variety of architectural drawings in

eight categories: Presentation drawings, Instruction drawings, Consultation drawings, Experiential drawings, Diagrams, Fabulous drawings, Proposition drawings & Calculation drawings. Some of these media, in various professional systems, are defined within the vocational tasks of draftspersons. By

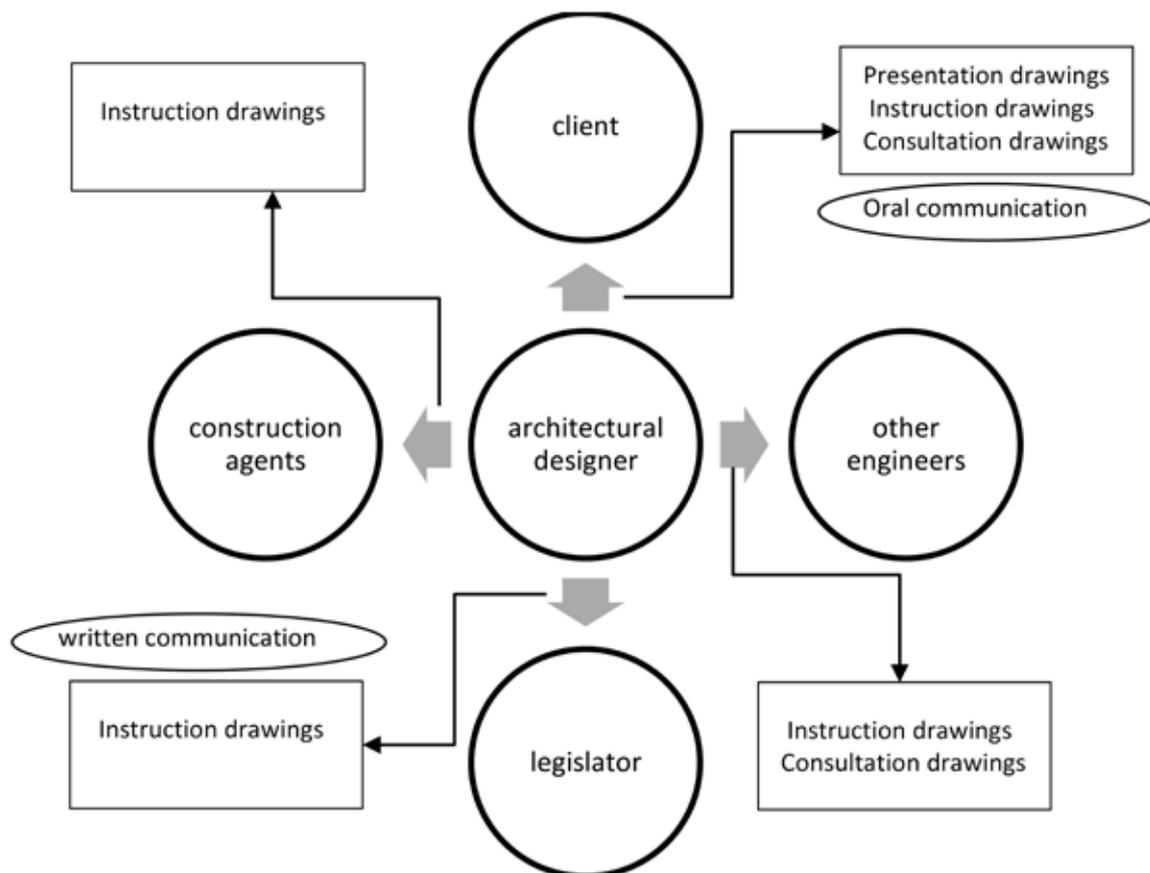


Fig. 2. Types of communication media used in design office. Source: authors.

merging considering the “diagrams” in the range of consultation drawings, the following model (according to the application of the two in the present discussion) illustrates the types of media operation in the interactive structure of a design office (Fig. 2). Two above mentioned types of drawings (Fabulous drawings, Proposition drawings) are parts of the design-thinking or research on the design and they are kinds of actionresearch during designer’s work (see Chapter V of the Grout and Wang, 2005). Therefore they were not assumed as main duties of drafters while the two types of Presentation drawings& Instruction drawings are central to

the work of drafters in Iran. In a system such as Switzerland, these media are produced by separate technicians, and in Germany, because of the involvement of the architectural technician with civil and mechanical engineering (Interview with Dr. Lehmpfuhl, correspondent of Federal Institute for Vocational Education and Training (BIBB)., dated Sep. 3, 2013), so in these systems, technicians’ works are not professional post-production of drawings. As shown in Table 1, for the presentation media , it is probably not necessary for the employed person to have the ability to architectural analysis or design, and practically a good renderer or a good model-maker

(even with computer systems) without any architectural education, can do the job, the only needed skill is understanding the architectural drawings, relying on his mechanical skills. Therefore, in the Swiss system, the technician specialized in the production of three-dimensional volumes for architecture is independently defined and has separate trainings from other architectural technicians (BBT, 2009a). In the case of Instruction drawings & Consultation drawings (those are in fact technical and informational media), or technical drawings, it should be noted that there is no exact boundary between different design phases ;that is to say –for example- the phase 0 or 1 to involve design skills while phase two includes mechanical abilities. Dana Cuff (2003) considers these boundaries a sort of agreement between the client and the designer to exit the designing process. Thus, the process of architectural design, and in particular the problem-solving process, is not ended by any of the phases of drawings production: drawing an executive datasheet, not only needs technical knowledge, but also on aesthetics, environmental psychology, and even behavioral awareness of the user in many cases. Lawson has separated Consultation drawing from other drawings based on its role in design communication (its drawing nature has no effect in

Lawson’s definition): this media is used for showing to the client as well as office staff for the “unfinished design”. For this reason, the designers, while not willing to provide it to the client, if necessary, want it to show the lack of establishment and non-completion, in the such drawings: it is for the client, in order not to miss the possibility of his surprise, and for the employees, to use their intellectual ability while drawing up the plan (Lawson, 2004: 36-7); if using these drawings to illustrate the design to the client, the use of multiple alternatives is a good tool for displaying the “incompleteness” of the project, the production of which may be left to the draftspersons. Obviously, in contrast to the presentation media in which the subject is quite clear, here, , the design must not be understandable by the client, . So its producer needs the have the ability to analyze appropriately. “Oral media” is among the most important and overlooked topics in the educational process of architecture. Dana Cuff (Ibid), within her discussion about social skills, has highlighted the necessity of incorporating this subject into the architectural curriculum. The purpose of the media is twofold: engaging in relatively specialized discussions in the architecture office, and more importantly, the ability to communicate with the ordinary people involved in design process (the user, the client, or everyone

Table1. Summarizing the features of design media related to the work of architectural drafters. Source: authors.

Media type	Skill achievement method	Type of skill	The relation between design thinking and design skills		
			Understanding the problem	Analyzing the problem	Problem-solving
presentational	Academic curriculum	Professional	○		
Instructional (technical and informational)	Academic curriculum	Professional-interdisciplinary	○	○	○
Consultative	Real experiments (during academy)	interdisciplinary		○	
Written	Academic curriculum*; Real experiments (at work)**	professional	○	○	
Oral	Real experiments (at work)	social	○	○	

\*same as in American architectural drafters’ education

\*\*same as in Iranian architectural drafters’ education

who is related to design projects); Although studying of the first case is important in discovering the design process and has been studied by some design-researchers (Lawson, 2004, Chapter VII), but the latter is more important for the architectural ideals in general; while Cuff argues the results of such discussion as a kind of pre-design structuring and a controlling tool for design process (rather than a part of the design itself), Medway (quoted in Luck & McDonnel, 2005) suggested that the content of these discussions is about what he called “virtual building; therefore, it is possible to say that the entering into such dialogues and their constructive continuation require the ability to analyze design works from the architectural view point and the ability to transfer these concepts and discuss them with the building user. In fact, as with any other specialized activity, the interview requires a prior skill and readiness (Duerk, 2010: seventh chapter); this becomes more important because in many residential small projects (despite the importance of these designs in the life of general users) initial interview with the clients is handed over to the draftsmen (the results of the inquiry in the future section will fully support this issue). Therefore, the subject of design media is an issue that requires a drafter to be relatively familiar with “design- thinking” and even complete analysis of design issues; This point is suggested in a survey of experts’ views. In the next section, the results of a survey on the role of architectural drafters (the future section) in Iran are presented and analyzed

### **Surveying the career status and professional position of the architectural draftsman**

There are many implicit anecdote about the occupational status of architectural drafters within various experts of academic society and real practice, but no field study exists on this issue in Iran (as far as the first author is concerned). In order to obtain a more realistic picture of the career status of architectural drafters, a survey of drafters of city of Qom was carried out by the authors in three phases. In the first stage, in the summer of 2012 and 2013, detailed

reports on the status of the design offices in the city of Qom were prepared with the help of students of architectural drafting. The reports included the working status of architectural drafters and interviews with draftsmen and the master architect of the design office; these twelve reports are cited in the following analysis with codes K1 to K12. In the second and third stages, one year later and four years later, two separate questionnaires, but with a similar structure, were used to assess the status and views of the two groups of technicians (as employed) and engineers (as their employer). The main questionnaires were distributed at the offices of Organization of Building Engineers of Qom province (about half of the offices in Qom were included). In the early questionnaires, there were several general goals, but it was kept open to explore another issues and the possibility of recognizing new items. The general objectives mentioned can be noted in the following points:

- The type of general duties assigned to the drafters and office technicians as well as their own preferences for working duties;
- Specific capabilities of these technicians to perform their duties in comparison with their competitors from the point of view of themselves as well as their employers;
- Expectations and the degree of job satisfaction of the technicians of their professional status;
- The future image of technicians from the perspective of two groups;
- the possibility of defining new job tasks for these technicians.

The design of this study is a combination of quantitative and qualitative methods of analysis So a total of 12 internship reports, 48 questionnaires from building engineers (architects and structural designers), and 30 questionnaires from the apprentice were received and analyzed . In this study, descriptive statistics from questionnaires were interpreted by using apprentices reports .

### **Discussion**

From the comments of engineers, there are at least two kinds of viewpoints about this job position: a group believe that it would be possible to transfer

the complete job of the designers to the drafters. In this category, some consider experienced drafters as very helpful, so that they can do the whole design process (K9 Report); However, they may prefer this approach because they consider more regular or minor tasks of little importance (report, K10, K11 K7); this approach was preferred even by the architect professional of the design office of the University of Medical Sciences (In spite of the specialty of the work) (K5), one of the engineers (K6 report) explicitly attributed this to the extent of the designers responsibility; the comments made by one of the drafters on the designer show that he has

delegated all designing works to the draftspersons (K12). Another architect is more explicit in this regard, acknowledging that the topic is about architectural conscience, and he designs himself only when his work is in his own right or he wants to go to the municipality (K2, another designer K12 has similar statements); another report (K1) adds issues that the client insists on designing by the architect himself, and this is of paramount importance, because the lack of client’s knowledge of usual role of the architect may contribute these designers’ misconduct. An interviewed drafter (in K11 report) also acknowledges that if the client insists, the

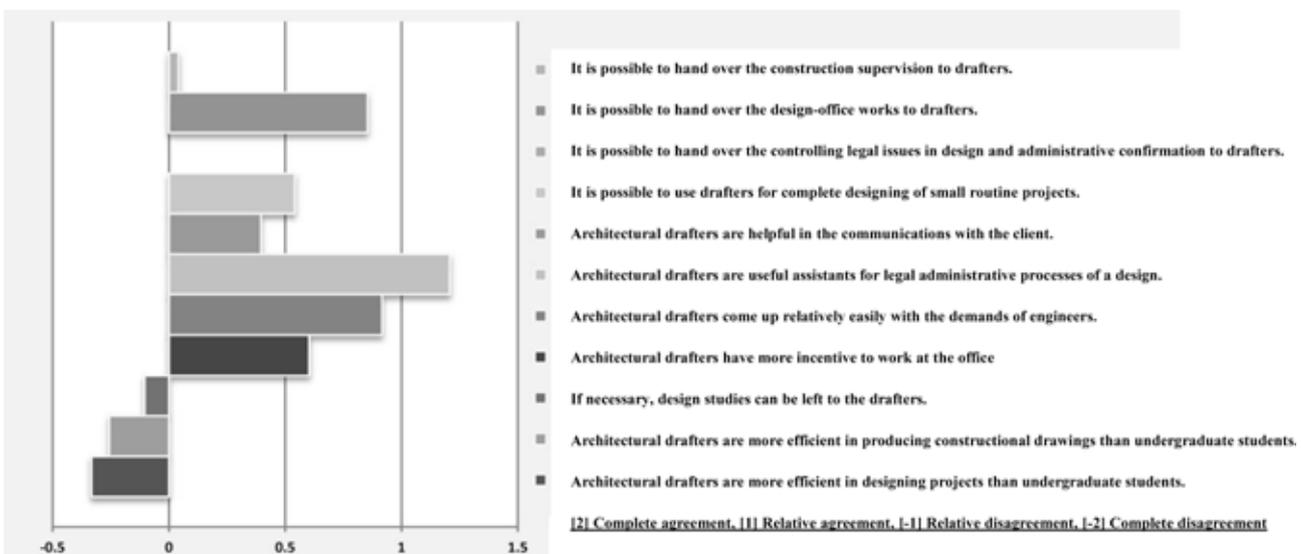


Fig. 3. Engineers’ Comments on Technician Job Capabilities. Source: authors.

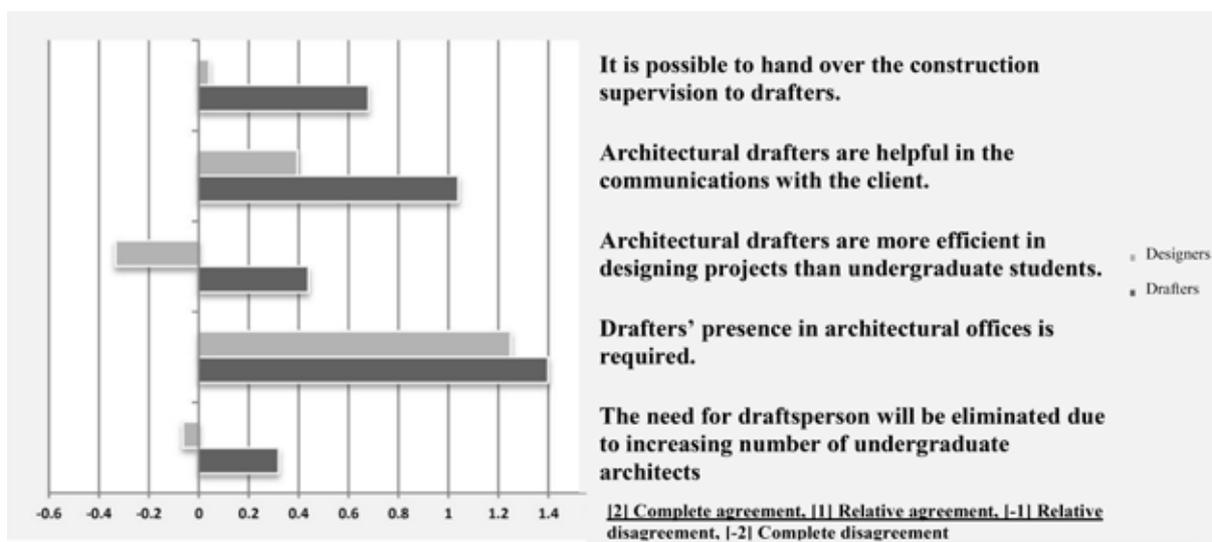


Fig.4. Comparison of Engineers’ and Technicians’ Comments on Technician Job Capabilities. Source: authors.

architect will carry out the design work himself. In contrast, the behavior of some architects is congruent to the basic predictive role for technicians, that is, the

completion of lateral design tasks, not design (K8, K6, K4, K2, and K3); at the same time, sometimes, this method is attributed to the crudity of the architect

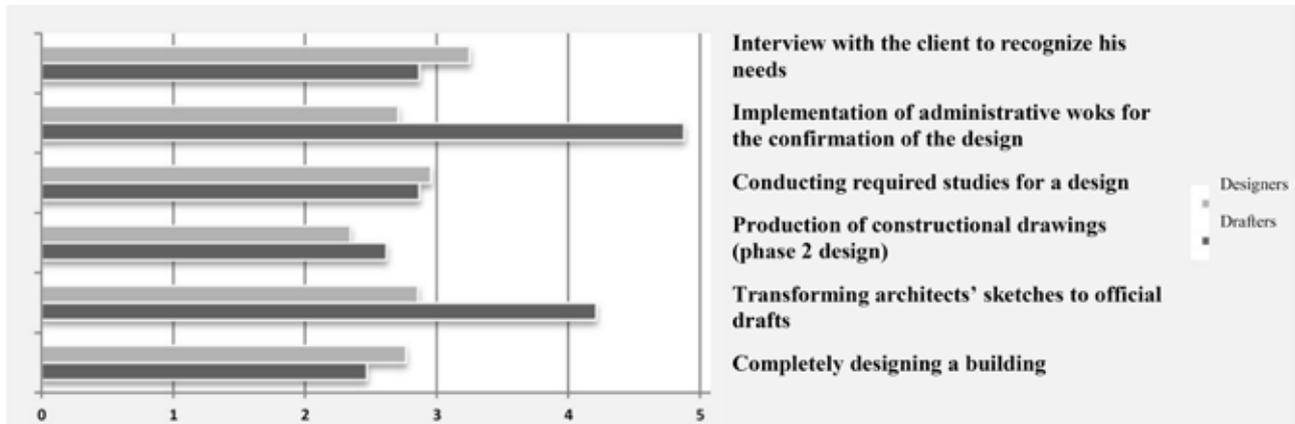


Fig.5. Comparing the classification of engineers and technicians of their preferences for the assignment or acceptance of job tasks for draftspersons (numbers, representing the importance of the subject from 0 to 7. Source: authors.

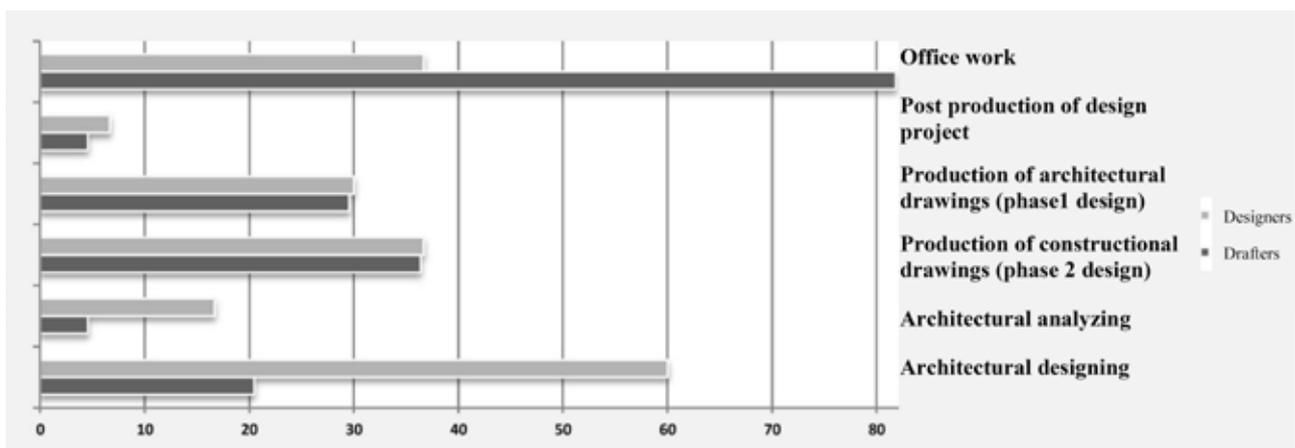


Fig.6. Comparing the report of engineers and technicians about the tasks that are normally left to the draftspersons in the architectural offices (numbers indicate the importance of the subject. Source: authors.

(K8). However, the analysis of this architect is also noteworthy: “In the design of a residential building ... at the moment, the owner’s views have the most influence on the design process ... The least impact on design is owned by architect’s ideas; that is why most architects give their projects to the drafter and they only confirm drawing at the final stage ...”(Ibid.). The results of other parts of the questionnaire help to better explain this issue. As shown in Fig.3, architect professionals, in spite of that they have technicians to do most of their designing job, they do not approve the efficiency of them compared to bachelor students. It is

the same but with a lower scale about the two issues of design studies and supervision of construction on site. But in response to the question of whether “the design of ordinary plans can be left to the drafters”, the opinions have been towards “relative agreement.” Therefore, it can be said that this is in line with the previous analysis that for architects are not very interested in small and ordinary projects; in other words, at least it means that they are not worried about the quality of such designs even if they would be socially judged for such works. It is clear in Fig. 4 that assessments of technicians about their professional capabilities are higher than

the evaluation of engineers (architectural and civil, especially when we consider the results of issues of design capability and ability to communicate with the

client. This can be attributed to the real situation of the offices. The emphasis on office work by engineers shows that this is due to the “bottom-up” classification of office

Table2. Summarizing the survey results. Source: authors.

subject	Direct results of the survey on the job status of architectural technicians	Analyzed results	Referred chart
<u>The survival of technicians in the profession</u>	1. Technicians are not fortunate enough to remain in their working place, but engineers (as employers of this profession) believe in the survival of this profession and its necessity in the future.	1. The increase in the number of graduates in the field of architecture has convinced the technicians that they will take this position from them. 2. Lower wage, obedience and lower social status of the technicians, are some issues that made the presence of these people more desirable for engineers.	Fig.4
<u>Capabilities of technicians</u>	2.Perform administrative procedures (municipality, etc.) 3. Comprehensiveness and flexibility towards engineers' demands 4.Capability and higher motivation for office work 5.facilitating communication with the client	Engineers, unlike technicians, have not evaluated the capabilities of the technicians in designing and producing drafts, and emphasize on the capabilities of these people to conduct administrative jobs. In the case of the introduction of technicians to the process of construction implementation and supervision, there has not been a very positive view from engineers.	Fig.3&4
<u>Common tasks of technicians</u>	6. Perform administrative work to confirm the design 7. Complete design of small projects 8. Interview and direct contacts with the client	Contrary to the imagination of designers of the curriculum (especially the art group), the practitioners in the current process are less likely to enter the technical design (Phase II) or practical tasks (such as the production of an architectural model). These issues are common in the consulting companies that the technicians are less likely to be accepted for work.	Fig.5&6

work, which is more likely to be bearable for technicians than undergraduate students and so their relative survival will be guaranteed in the profession. The preference of job employers of technicians (including offices of the Organization of Building Engineers) is to hire the staff with lower levels of education because they are more flexible and adoptive at work (Shariatyazadeh, 2013). This is a factor that has a profound effect in the preference for technicians within architectural firms. In Chart 5, the most important difference between the views of engineers and technicians is due to transfer of administrative work where the technicians have not shown much enthusiasm to it (unlike the engineers) The drafters' tendency to “turn the architects' sketches into official drawings” (as the first priority) shows that

their tendency to be more active in their defined position is far more than engineers. Of course, in comparison with Fig. 4, it is evident that the beliefs of most of the technicians in their ability to design are not enough to claim themselves capable of this responsibility in the design offices and has yet accepted the status of the engineer in this regard. Fig. 6 is related to the questions about the tasks usually wanted from the technicians (by 0 and 1, respectively, for non-handed over and handed over tasks, the average of which is converted to a scale of 100, to be more clear) and shows that the perspectives of engineers and technicians are not much in agreement with this, and, to some extent, shows some inconsistency compared with previous results. But through the results, it is possible to claim that engineers

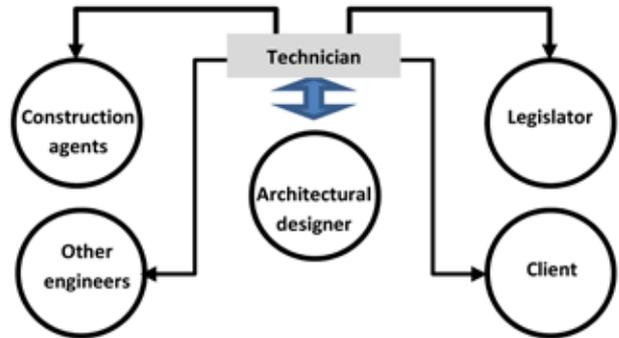
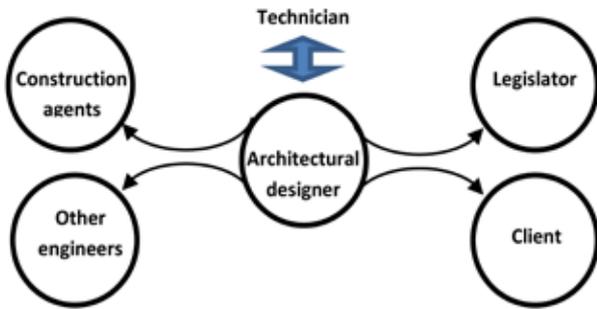


Fig.7 (left) and 8 (right). The basic modes of the job position of the technicians- two patterns of minimum and maximum duties assigned to them in various architects' professional systems. Source: authors.

Mode 1: The technician is the assistant to the designer in the design of the project and directly performs his work; the quoted model of the designers in the early 20th century is mostly like this; this is a kind of master and pupil relationship (in the traditional mode) while at the same time bringing the designer-drafter relationship very close. This is the case when the architect attaches great importance to design work. Mode 2: Although it is very similar to mode1, its reason is just the opposite of Mode 1: the architect professional here is self-denial and his work is completely delegated to the drafter; the low wage of design works and non-commitment of the profession made this mode as a common practice of some small architectural offices in the cities of Iran; it is thought that the architect retains his high status by staying away from the perspective of others. And "Signature" (means of official confirmation of architectural design) as the main manifestation of his attendance will be of special significance; in this case, the career status of the practitioner is highly depended on the social structure of the office, but, its social status is less than that of Mode 1, because the design work is less important.

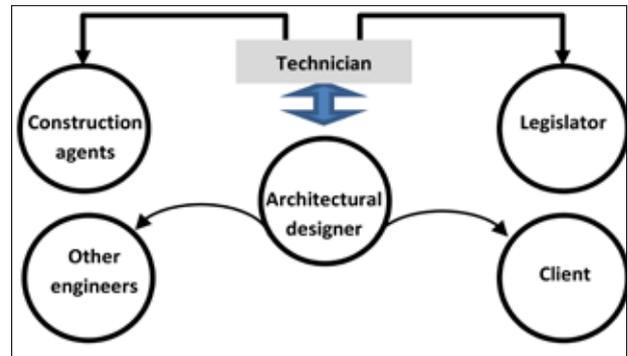
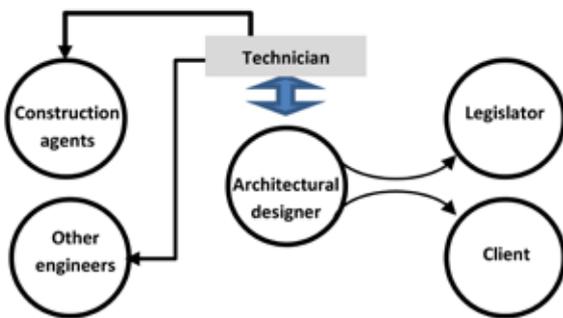


Fig.9 (left) and 10 (right). The basic modes of the job position of the technicians- two patterns of the middle range of duties assigned to them in various architects' professional systems. Source: authors.

Mode 3: The architect himself takes the responsibility of the issues related to "definition" or "limiting" design problem and uses technician work to promote "after design" issues; the German system is very similar to this model; Here the apprentice will have a kind of professional independence (due to division of labor based on the difference of specialties). The social status of this position depends on the community's view of intellectual work versus practical work (which is clearly less pronounced in the German system).

Mode 4: The architect himself takes the responsibility of the issues related to design problem directly, but the "design limitation" factors are premised on the drafter; what is the determinant or limiting factor, depends on the professional system of architecture in every community; but in the UK, and based on reports from drafters' websites in UK, their main role in resolving the legal issues of the design is the reason for inclusion of them in this category.; Another professional approach leading to such a mode is division of office tasks into internal and external ones; in this case, the link between the architect and other related engineers is more tightened and the internal work of the office is carried out with direct interaction, and the drafter (technician) is responsible for the "external tasks" of the office.

tried to conceal their trend of transferring of their own duties to technicians. It is clear from the large difference in the rating of "architectural design" between the two groups. Also, low social status of administrative works may have forced the technicians to conceal

this fact that it is their main duty. The extra reference to Rendering and Phase Two drawing, mostly shows the technicians' desires not their real works because in reality these jobs does not have any place in the ordinary works of the building engineering system (based on

experiences of authors and 12 mentioned reports)

## Conclusion

The present study shows that throughout the history of the architectural technicians in Iran, there has been a transition from a division based on the degree of specialization (trainee and traineeship) towards labor division based on social class. The first result of this evolution is the reduction of the social position of this job and the lack of incentive for technicians to survive in this job position, or to strive for self-education and improve the quality of work in this position. According to this research, the main task of the technicians in the building professional system of includes two main issues: office administrative services and the complete design of buildings that are not considered to be of importance to the quality of the profession; it would be at the same time an opportunity and threat for the profession; that is, if this situation is not sufficiently taken into account, a large part of the human-made space will be affected by the works of persons who are not qualified and have (to a certain extent)required experiment for designing I. In contrast, if good planning is based on the actual status of technicians identified in this research, then existing professional capabilities can be used to improve some neglected parts of the architectural profession (such as small and low-paid building projects).

## Reference list

- *Architectural and Building engineering Technology Full-time, Diploma of Technology1*. Available from: <http://www.www.bcit.ca/Architectural and Building engineering Technology Full-time, Diploma of Technology1.mht>
- BBT. (2009 a). Polydesignerin 3D/Polydesigner 3D mit eidgenössischem Fähigkeitszeugnis (EFZ) [Polydesignerin 3D / Polydesigner 3D with Federal Certificate of Proficiency (EFZ)]. *Verordnung des BBT über die berufliche Grundbildung*: vom 13. August 2009. Switzerland: BBT.
- BBT. (2009 b). *Zeichnerin/Zeichner mit eidgenössischem Fähigkeitszeugnis (EFZ) im Berufsfeld Raum- und Bauplanung*. Verordnung des BBT über die berufliche Grundbildung: vom 28. September 2009. Switzerland: BBT.
- Benevolo, L. (1998). *Storie dell'architettura moderna*. Translated by: Hassan Nayyerahmadi. Tehran: Moshanir Consulting Engineers.
- BGBI. (2007). 191. *Verordnung: Bautechnischer Zeichner/Bautechnische Zeichnerin-Ausbildungsordnung*. Ausgegeben am 1. Teil II. August 2007. Nr. 191. Available from: [www.ris.bka.gv.at](http://www.ris.bka.gv.at).

- Bozorgnia, Z. (2002). *Memaran- e Iran az dore-ye bastan ta Qajar* [Iranian architects from the ancient to the end of the Qajar era]. Tehran: Directorate of Education, Publications and Cultural Products (Research Center) of the Cultural Heritage Organization.
- Cardoso, F. F. (2017). How Wide is the Gap? Evaluating Current Documentation of Women Architects in Modern Architecture History Books (2004–2014). Women Designers. Craftswomen. Architects and Engineers between 1918 and 1945. *Proceeding of 1st MoMoWo Conference-workshop*. Eds: Groot, M., Seražin, H., Garda, E. & Franchini, C. .France Stele Institute of Art History. Ljubljana: France Stele Institute of Art History ZRC SAZU.
- Cline, T. J. (2017). *The Educational Value of Craftsmanship: Taking Account of the Deep Structure of Western Thought and its Influence upon Education in Design*. Ph. D. Thesis. Norman. Oklahoma.
- Council for Educational Planning and Academic Curriculum. (2005). *Moshakhasat- e koli, barname va sarfasl- e dorus- e dore-ye kardani peyvaste elmi karbordi- ye naghshekeshi- ye memari* [General Specification, Curriculum and course syllabus for applied sciences. Architectural Design Technicians]. Tehran: Msrt.
- Cuff, D. (2003). *Maharatha- ye ejtemaee- ye tarahi dar herfe va amuzesh- e memari* [Social skills in professional design and architecture training]. Translated by Ali Alae. *Soffeh*, 13 (37): 134-119.
- Davis, H. (2006). *The culture of building*. NewYork: Oxford University Press Inc.
- Durkheim, E. (1984). *The Division of Labour in Society*. Introduction by: Coser, L. Translated by Halls, W. D. UK: MacMillan Press Ltd.
- Duerk, D. P. (2010). *Architectural programming : information management for design*. Translated by: Sayed Amirsaid Mahmoodi. Tehran: University of Tehran.
- Ghadiri, B. (1994). *Ashnaee ba ostadkaran- e emari- ye sonnati-ye Iran (Ostad Reza)* [An Introduction with Masters of Traditional Iranian Architecture (Ostad Reza)]. *Soffeh*, 4 (13-14): 95-88.
- Ghadiri, B. (1996). *Ashnaee ba ostadkaran- e emari- ye sonnati-ye Iran (Ostad Mohammad Sha'rbaf)* [An Introduction with Masters of Traditional Iranian Architects (Ostad Mohammad Sha'rbaf)]. *Soffeh*, 7 (24): 111-92.
- Giddens, A. (1991). *The Consequences of Modernity*. Oxford: Polity Press. Blackwell Publishers Ltd.
- Groat, L. & Wang, D. (2005). *A chitectural Leseach Methods*. Translated by Einifar, A. Tehran: University of Tehran.
- Gutman, R. (1988). *Architectural Practice: a Critical Review*. NewYork: Princeton Architectural press.
- Higgs, P. L. & Lennon, S. (2014). *Australia's Creative Employment in 2011 – An Analysis. 2011*. Queensland University of Technology. Brisbane: QLD.
- Institute for Career Research CHICAGO. (2005). *Careeres in Commercial & Institutional Architecture. Institute Research Number 388*. Available from: [www.careers-internet.org](http://www.careers-internet.org).
- Jefferis, A., Madsen, D. A. & Madsen, D. P. (2011). *Architectural Drafting and Design. sixth edition*. USA. Delmar: Cengage Learning.
- Kermanian, A. (2009). *Memari faratar az memari: moshkelat- e memari- ye moaser- e Iran* [Architecture Beyond Architecture: Contemporary Iranian Architecture Problems]. Tehran: Ali Kermanian.
- Khan Mohammadi, A.A. (1992). *Fotovvat-Name-ye Bannaian* [Oath the builders]. *Soffeh*, 2 (5): 15-10.
- Kostof, S. (1977a). *The Practice of the Architecture in the Ancient*

*World: Egypt and Greece. The Architect: Chapters in the History of the Profession.* Edited by Kostof, S. New York: Oxford University Press: chapter1.

- Kostof, S. (1977b). *The Architect in the Middle Ages. East and West. The Architect: Chapters in the History of the Profession.* Edited by Kostof, S. New York: Oxford University Press: chapter3.
- Kostof, S. (1977c). *Preface. The Architect: Chapters in the History of the Profession.* Edited by Kostof, S. New York: Oxford University Press.
- Lawson, B. (2004). *What Designers Know.* Hertfordshire, UK: Architectural Press.
- Lehmpfuhl, U. (2013). Interview. Federal Institute for Vocational Education and Training (BIBB). Section 1.3. *Internet. Coordination of Enquiries and Internal Knowledge Management.* Sep 3. 2013.
- Luck, L. & McDonnel, J. (2005). Architect and user interaction: the spoken representation of form and functional meaning in early design conversations. *Design Studies*, 27 (2): 141-166.
- Mac Donald, W. L. (1977). *Roman Architects: Chapters in the History of the Profession.* Edited by: Kostof, S. New York: Oxford University Press.
- Mac Donald, W. L. (1977). *Roman Architects: Chapters in the History of the Profession.* Edited by: Kostof, S. New York: Oxford University Press.
- Nari Ghomi, M. (2015). *Prdimh- ye masale dar memari: ruykardi novin be barnamedehi farhang gera va karbarmehvar dar memari* [Paradigms of Problem in Architecture: A New Approach to Cultural and User-Based Programming in Architecture]. Tehran: Elm-e Me'mar Royal.
- Necipoglu, G. (1992). *Geometric Design in Timurid/Turkmen Architectural Practice: Thoughts on a Recently Discovered Scroll and Its Late Gothic Parallels. Timurid Art and Culture: Iran and Central Asia in the Fifteenth Century.* Edited by Golombek, L. & Subtelny, M. Leiden: E.J. Brill.
- n. a. (1976). Report of the Committee on Architecture and Urbanism of the Group on the Study of Iran's Issues in the Light of the Revolution of the Shah and the Nation. *Jame' Novin*, (8): 65.
- Pfeiffer, B. B. (1994). *Frank Lloyd Wright.* Germany: Benedikt Taschen.
- Piotrowski A. & Williams Robinson, J. (2001). *The discipline of architecture.* Minneapolis: University of Minnesota Press.
- Pishva Yazdi, M. (2011). *Ravayat- e bannaee ta ostadkari: khaterat- e ostad- e memar, Mohammad- e pishva yazdi* [The Story of Becoming a master Architect: Memories of the Architect. Mohammad Pishva Yzadi]. interview: E. Androodi. Tehran: Elm-e Me'mar Royal.

- Quddusifar, S. H., Etesam, I., Habib, F. & Panahi Barjai, H.. (2012). Iranian Traditional architecture Education and Place of Subjective Perception in it. *Journal of Iranian Architecture Studies*, (1): 58-39.
- Rosenfeld, M. N. (1977). *The Royal Building Administration in France from Charles V to Louis XIV. The Architect: Chapters in the History of the Profession.* edited by Kostof, S. New York: Oxford University Press.
- Rubeling, A. W. (2007). *How to start and operate your own design firm: a guide for interior designers and architects.* 2nd ed. New York: Allworth Press.
- Salingaros, N. A. (2007). Comments on Ashraf Salama's Article: "... A New Vitruvius...?". *International Journal of Architectural Research Archnet- IJAR*, 1(2): 132-134.
- Shariatyadeh, M. (2013). Danesh ya manesh- e herfei, kodam dar olaviat ast? [Knowledge or professionalism; Which is the priority?]. *Rosh Amoozesh-e Fanni va Herfe'i*, (3): 8-4.
- Soltanzadeh, H. (2004). Hossein- e Lorzadeh [Hossein Lorzadeh]. Name- ye Ensanshenasi. *Name- ye ensanshenasi*, 3 (6): 232-227.
- The High Council for Planning of the Ministry of Culture and Higher Education. (1995). *Moshkhasat- e koli, barname va sarfasl- e dorus- e dore- ye kardani- ye memari, goruh- e honar* [General Specification, Curriculum and course syllabus for Architectural Design Technicians]. Department of Art. Tehran: Ministry of Science and Technology Research.
- Wilkinson, K. (1977). *The New Professionalism in the Renaissance. The Architect: Chapters in the History of the Profession.* edited by Kostof, S. New York: Oxford University Press.
- Willber, D. (1986). *The Architecture of Islamic Iran: the Ilkhanid period..* Second edition. Tehran: Corporation of Translation and Publication of Books.
- Wilton-Ely, J.. (1977). *The rise of the professional architect in England. The Architect: Chapters in the History of the Profession.* edited by Kostof, S. New York: Oxford University Press.
- Woods, M. N. (1999). *From craft to profession: the practice of architecture in nineteenth-century America.* California: University of California Press.
- Zarei, M. E. (2010). *Getting to know world architecture.* Tehran: Fan-Avaran.
- (n. d.). Architecture and engineering. Available from: <https://www.bls.gov/ooh/architecture-and-engineering/drafters.htm> (accessed September 03, 2018).
- (n. d.). Programs of Study. Available from: <http://www.NOVA2012-2013COLLEGE CATALOG PROGRAMS OF STUDY.mht> (accessed September 03, 2018).

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