

Actors Behind the Transformations of the Nasiriyah City Center, Iraq

Hiba A. Sajit^{1*}, & Haitham Abdul Hussein Al-Shamari²

Department of Architecture, College of Engineering, Nahrain University,
Baghdad, Iraq

Email: uengineer91@gmail.com

dr.haitham.abdulhussein@nahrainuniv.edu.iq

Abstract

City centers witness morphological transformations during their growth as a result of the interaction of a group of factors. These relate to the decisions of human urban actors such as individuals, society, and institutions, as well as the non-human aspects such as legislation, laws, social, economic, political and other factors.

This research aims to diagnose the role of the will of urban actors in morphological transformations and analyze their influence using the actor-network theory. It is an attempt to classify, interpret and predict the nature of the transformation processes of the city centers. The research focuses on the lack of knowledge in determining the role of urban actors in creating morphological transformations: in this case, in the old city center of Nasiriyah, Iraq.

The research adopts a descriptive approach to present the reality of the region and an empirical approach in analyzing the elements of the network-the actor. It arranges the actors according to power, influence and control in the transformation processes through the analysis of the controversy using semantic graphics and the Powergram matrix for human and non-human actors.

The paper concludes that the difference in the order of the actors' wills affects the final outcome of the transformation process.

Keywords: Actor-network theory, Human and Non-human actors, Morphological transformations, City centers, Nasiriyah, The will.

Introduction

The center of the Nasiriyah city has gone through a series of changes that has shifted it from being a tribal gathering to a planned city through which the population and their cultures have changed, and the local governments of various systems have followed it over the years. In the period from 2003 to 2021, major changes have occurred in the urban scene of the Nasiriyah city center in terms of land uses, demolishing residential houses and administrative buildings and constructing commercial complexes in their place. The residential uses have become confined to almost narrow alleys, in which it is difficult to convert the houses into commercial buildings. However, a large percentage of the residential houses have been reconstructed in a modern style and with modern building materials. Others have

turned into commercial complexes, in addition to the chaos and the absence of an urban context or a unified urban scene. The researches ask the following question: Is it possible to predict transformations of a city by actors and the urban will?

Research Hypothesis

The research hypothesizes the following.

- 1- The relatively stable urban transformations are a black box that can be opened and revealed according to the maps of the debate.
- 2- The arrangement of actors according to their interventions and impact on urban transformations contributes to the interpretation of these transformations and the prediction of their nature later, especially in the city centers.

Literature Review

Transformations occur dynamically in the urban built environment as a result of the continuous interaction between material parts and aspects of life. These transformations are either a change at the level of the urban context of the existing environment, or they are forced to achieve different social, economic, or political goals, by changing the physical and urban features of the structure by introducing new structural relationships and urban elements that reflect different and renewed intellectual orientations (Salman, 2018). Therefore, it can be defined as the changes resulting from the decisions and strategies of countries in the long term affected by the actions of individuals and institutions that affect the physical structure of city centers. It has become a broad concept that includes the study of the influence of individuals, institutions, and the effectiveness of users within the urban environment, and its impact on the urban form, the existing fabric, or the built structure in general. (Owaid, 2013).

Bentley (2002) points out that it is not possible to reach a useful explanation for the transformation by focusing on non-human factors only, such as technology. This approach obscures the real ways in which people participated as the causes of the urban transformation processes. This approach is negative for two reasons: the first is on the intellectual level, as it ignores the role that human desire plays in leading the process of change. The second is on the political level: it weakens power because it obscures any possibilities available for active intervention to change things for the better. Bentley recommends the importance of studying the relationship of individuals of all kinds with the existing urban structure of the city, (social resources and rules), which results in urban changes (Bentley 2002).

Al-Hinkawi & Alkubaissy (2017) have explained the role of planning policies resulting from the decisions of the ruling authority only, which results in the creation of a new nucleus, and the development of cities in the new directions that weaken the old city center. They point out that such approaches lead to urban decay and the disappearance of the valuable cultural heritage, which is supposed to be preserved and developed instead of creating causes for deterioration.

Bosselmann has given importance to the role of designers in the process of transformation, being a background to the current situation and the continuity of the past, whether good or bad, and not responding to the pressures and interests of those who have power to achieve political goals. This is because they will be tools of implementation only that seek to abandon everything that is old and create a new different place (Bosselmann, 2009).

According to Maculan & Moro (2020), there is a relationship between urban renewal policies in cities and urban transformations. They contribute to changes in the physical structure and urban fabrics of the city, and the work of economic and social forces. They define urban renewal as a set of policies and planning practices that address urban problems through government-led redevelopment. It is an internal

activity to transform an urban area by improving its environment and infrastructure, thus improving the quality of life, providing social services, improving economic conditions and job opportunities, and advancing social and environmental realities. The application of comprehensive urban renewal strategies requires the application of strategic planning, which is the process of laying the foundations for long-term integrated work, a system of how to deal with risks, identifying specific procedures and formulating local economic indicators by setting strategies that will be completed in the future (Maculan & Moro, 2020).

It is important to follow the participatory approach for the success of urban planning in terms of the necessity of taking medium and long-term decisions. The process of participation in urban decision-making is a crucial element for the success of urban planning and then urban design, as it is a social and political task that requires conditions to function properly. It is necessary to obtain community approval for the planning and decision-making process related to urban development, to enhance their sense of responsibility towards the city. It will clarify the reasons for planning and activate the community and individuals to take their role in decision-making by participating with ideas, as well as choosing and evaluating alternatives (Al Ani & Al Wahab, 2020).

It was noted that there is no comprehensive knowledge on the actors and what goes on inside the transformation process until it reaches a relative stability. Most of the current research is focused on the results of the transformation, and consider transformation a clear phenomenon; we need to know that it is a complex process and has many actors.

Research Methodology

The research aims to diagnose the role of the will of urban actors in morphological transformations and analyze the strength of their impact according to the actor-network theory as an attempt to classify, interpret and predict the nature of transformation processes of city centers.

To achieve this goal, the research discusses previous studies that dealt with the concept of morphological transformations. Afterwards, the role of the actors influencing the transformations and the definition of the urban will is studied and analyzed through the data of the actor-network theory. The research then turns to describing the case study of the old city center of Nasiriyah, and reveal the contents of the black box of the network of influential actors in its transformations. It considers the period from 2003 to 2021 for this task.

This is done by analyzing the reality of the region and collecting information, electronic documents, and plans of the old city center of Nasiriyah. For the purpose of testing the research hypothesis, two types of measurement tools that have been developed according to the actor-network theory are used. The first is the controversy maps with semantic networks using the Gephi program, and the second is the Powergram matrix.

Actor-Network Theory (ANT)

Actor-network theory appeared in the mid-1980s, primarily in the writings of Bruno Latour, Michel Callon, and Steve Woolgar. It aims to describe the nature of societies themselves. They point out that the study of actors does not depend only on individual actors, but extends to human, non-human, and non-individual actors (Actor - or actant - to non-human, non-individual). The social network adds information about human relationships in a social and natural world whose elements have not been analyzed. Therefore, ANT aims to explain the essence of societies and nature (Latour, 1996).

Michel Callon defines it as the context that gives each entity its importance and defines its limits. It does this by linking the entity to others within its network (Callon, 1986).

According to Latour (1999), the term actor in ANT refers to anything to which others give an activity. It does not refer to any special motives of individual actors or to human beings in general as understood at the time. However, it is anything that is given to be a source of action. It does not have any particular specification of the human being, the self, or the social actor in social theories, but (ANT) is a mixture of human, non-human, and non-human characteristics. And the subject identifies, traces, or describes a definition of the world, or files, articles, lists, records, tags, or paths. All of these are called a network, and there is no network independent of the verb that tracks it, and the subject is not tracked outside the network. This is because the network is not a thing, but rather a movement that records something (Latour, 1999).

Networks in ANT represent basic elements, which are stable groups of relationships or connections used as a means by which the world and its layers are built. It is thus different from the standard methods used in sociology. In the Actor-Network Theory, lattices combine materials that have their own space-times into new and distinct bonds (Murdoch 1998).

Stalder (1997) clarified the basic concepts of Actor-Network Theory as follows.

- 1- Human and non-human actors whose actions or transformations are defined by a list of actions through which they access the potentials possessed by the actors.
- 2- Networks, since the relationship between the actors and the network is reciprocal, the actor cannot act without a network and *vice versa*.
- 3- The black box in which all network contents are preserved after reaching stability, prescription is what is allowed/disallowed for each element - human or non-human - in the network.
- 4- The intermediary is the link that connects the actors to a network and defines the network itself. The actors form networks through the exchange of media among themselves and thus determine the location of each of the actors within the networks, and the actors and networks themselves are formed.

In urban studies, actor-network theory is an active rational approach that links the theories of civilization, urban order, and behavioral theories. The dynamics and complexities of the urban system can be explained and treated from its perspective and all the elements (social, human, technical, etc.) within the urban system can be explained and treated. Together, these entities contribute to dynamic networks through which the understanding of the phenomena occurring in the city, including social phenomena, lies. (Boelens ,2010)

Cvetinovic et al. (2017) clarified the central methodological issues for translating terms to actor-network theory in the urban environment. They are: all human actors (stakeholders, whether they are individuals, groups or rulers) and non-humans (such as texts, symbols, events and concepts, urban structures and regions, institutions and political agendas, urban infrastructures), in addition to the social, economic, cultural and political aspects, depending on their activities and relationships, the mediators and links with which the actors are linked and the way in which the relationships between networks of urban actors are grouped.

For the purpose of studying the relationships between the actors in the city and the elements of the urban built environment, McGlynn et al. (1993) attempted to represent the power relations between the two actors in a single diagram using a matrix called: Powergram. It is a tool for examining the roles and potential effectiveness of urban design in the development process. The first column represents the physical components of the built environment (the basic elements used by urban morphologists) streets, blocks, parcels of land, and building forms.

As for the rows, the main actors in the process were assigned to the suppliers, such as land and capital; "producers", from developers to local government, professional groups and urban designers; and finally, the 'consumers', who are the users. All of us are included, even if we also appear in another category. The matrix distinguishes levels or degrees of power (hence its title) and distinguishes between actors that can exercise authority to initiate or control development, and actors that bear responsibility for some aspects of development, whether legal or contractual, and actors who have an interest or influence and therefore can only be effective through debate, alliance or participation (McGlynn et al. ,1993).

The Will of the Urban Actors

The research, based on the previous proposition of the actor-network theory, reached the multiplicity of actors and networks in the city and linked them to each other with certain relationships, whether urban, social, economic, political, or others. Thus, the urban environment within the city centers is represented by the human actors and needs, goals, causes, means and tools as well as by the non-human actors to achieve those changes. The will of the urban actors establish its authority and according to the role of the actors in the network within the community, which is represented by the extent to which the actors are connected with each other and with other networks.

According to what was previously mentioned about the role of the state and community members in decision-making and place-making, either in the form of individual decisions for stakeholders or community participation, the will of urban actors can be classified into the following (Al-Shammari,2017):

- 1- Governmental and institutional will
- 2- The will of investors and the private sector
- 3- The will of elites and academics
- 4- The will of the inhabitants or the will of the people
- 5- The will of the independent and semi-governmental bodies
- 6- Arrivals' will
- 7- Charitable will

The Case Study: The Old City Center of Nasiriyah

Nasiriyah is located in Southern Iraq, and is the administrative and functional center of Dhi-Qar Governorate. It is located 380 km south of Baghdad and 214 km North of Basra. The old city center of Nasiriyah (the old Kasbah) is located on the northern bank of the Euphrates River, at a latitude (31) degrees North of the equator, and longitude (46) degrees East of Greenwich (Nasiriyah City Development Strategy, 2008). The city center of Nasiriyah also represents the six old neighborhoods, according to 1957. They are Al-Sharqiya locality, Al-Jami' locality, Al-Saray locality, Al-Saif locality, Sabeen locality, and Al-Suwaij locality. The center can be described as a network of irregularly shaped residential and commercial plots. It is in the form of an almost rectangular strip that extends on the northern bank of the Euphrates River. Its length is about 2.5 km extending from the Al Muroor highway East of the city center to the Al-Zaytoun Street West of the city center. Its width is 1250 m extending from the Ibrahim Al-Khalil Street North of the city center to the Corniche Street South of the city center, where the northern bank of the Euphrates River exist.

The city of Nasiriyah was distinguished as the first city to be built in Iraq in a modern style, as it has straight intersecting streets. This was not common in Iraq at that time. Its planning was on one side of it: the left side of the Euphrates River (Al-Wardi,2003).



Fig. 1: The location of Dhi- Qar Governorate in relation to the map of Iraq

Source:https://www.marefa.org/%D9%85%D8%AD%D8%A7%D9%81%D8%B8%D8%A9%D8%B0%D9%8A_%D9%82%D8%A7%D8%B1

The Fig. 2 shows the location of the study area in relation to the plan of the Nasiriyah city. Fig. 3 is the plan of Nasiriyah city center in the sixties of the last century. From the observations in Fig. 3, it is clear that the predominant use is residential (residential blocks and houses built of reeds or palm fronds at the outskirts of the center). The important service activities are Government Serial, Republican Hospital (currently Al-Haboubi Hospital), Electricity Project, Rafidain Bank, Nasiriyah Boys School, Central Preparatory, Jumhuriya Intermediate School, Court Building, Dispensary, Nasiriyah High School for Girls, Nurses School, and the Al Sharqiya Primary School for Boys. In addition, there were buildings for the recreational activities such as the Al Jazeera staff club, summer cinema, playgrounds and public parks.

In 1974, decisions were taken to widen the Nile Street from 10 m to 50 m, and that commercial and service shops would be built on its side. It was necessary that the ground floors of both the Al-Haboubi and Nile Streets be designated for commercial and service use, while the upper floors are intended for the housing purposes (hotels or apartments for rent). The buildings on both sides of the Al-Haboubi and Al-Nile Streets should have a portico to protect pedestrians from the sun and the rain. The main commercial activities and some administrative activities are also concentrated in these two streets (Al-Sahlani,2019).

After updating the basic plan of the city in 1992, the old center became divided into two main types of uses: commercial, mixed (commercial - residential) and other miscellaneous uses (religious - administrative - recreational) (Fig. 4). The main uses became in the city center, where the areas of commercial use were identified only with the symbol (C.C), which are parts of the locality of Al-Saray and Al-Jamea, in addition to Al-Haboubi Street and Nile Street, as a major commercial axis. The Ibrahim Al-Khalil Street, was proposed as a commercial axis (formerly Nasiriyah drainage, which turned into a sewage stream for the area until the municipality of Nasiriyah buried it after 2003 in preparation for the establishment of the project to develop the commercial Prophet Ibrahim A.S Street). Some administrative uses of the government buildings and schools remained unchanged in the updated design. However, in reality, some government buildings have been demolished in preparation for transferring them to commercial investments.



Fig. 2: The location of the study area in relation to the basic design of the city of Nasiriyah
Source: Directorate of Urban Planning in Dhi -Qar



Fig. 3: The plan of the old city center of Nasiriyah in 1968
Source: General Authority for Survey

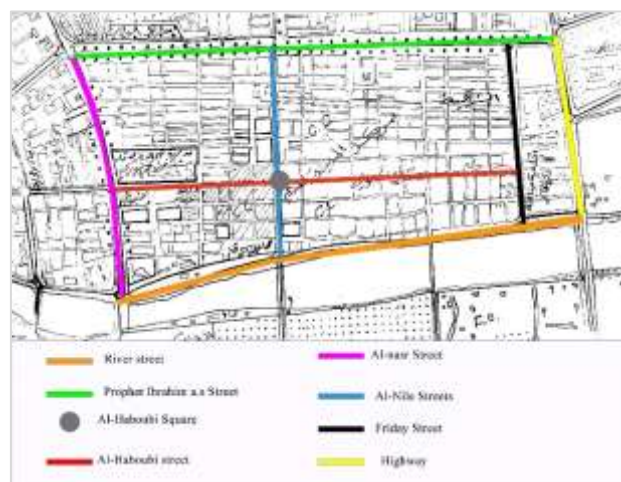


Fig. 4: The main streets and boundaries of the study area
Source: Author according to the plan of the Urban Planning Directorate for 1992)

As for the current uses, after comparing the land use plans with the reality of the city at the present time (through field surveys, aerial photos, and information received from the Directorate of Urban Planning and the Directorate of the Municipality of Nasiriyah), we find that the predominant use is commercial. The mixed use areas in the basic plan of the city have also turned into a purely commercial use, with a percentage of the residential houses located in narrow alleys remaining. They are not economically feasible when converted into commercial complexes, in addition to the difficulty of delivering services and goods.

Citizens are constantly demolishing the old residential houses and transforming them into multi-storey commercial buildings, some of which are six stories high. Most of the old commercial center buildings in the past were only two stories high with a portico. This is imposed through the construction permits granted from the municipality. On the other hand, the previous plans, when compared with the field survey of the area show a lack of commitment to the planned uses and activities according to the basic design, especially the administrative, service, and recreational buildings.

For example, but not limited to, a group of important government buildings that were affected by the bombing in 2003 were demolished and transferred for commercial investment (such as the governorate building and the Nasiriyah municipality building), in addition to the recreational buildings that existed previously (cinema, club), they were also converted to commercial use. Since the largest proportion of the land is owned by the citizens and they have the right to dispose of their property, any real estate within the commercial use in the basic design, when it is demolished, the owner turns it into a commercial space without taking into account the previous effectiveness as in Fig. 5 and 6.



Fig. 5: A detailed plan of the land uses in the study area
Source: Nasiriyah City Development Strategy Sixth Phase 2008



Fig. 6: The land use plan for the old city center of Nasiriyah

Source: Author based on the information of the Directorate of Municipality of Nasiriyah, Directorate of Urban Planning in Dhi -Qar and the survey of the situation



Fig. 7: An aerial photograph indicating the reality of the situation in the study area

Source: Author according to the reality of the situation - Google Maps -GIS online

The Measurement Using Mapping Controversies - Actors Diagram and the Gephi Program

More than twenty years ago, Bruno Latour envisioned controversial mapping as a new method for training students in observation and description and applied it to a variety of disciplines on an actor-network basis. Since then, controversial maps have been developed not only by the universities who developed them to suit their studies, but they have become the focal point of many international research projects. Since its inception, the main challenge has been how to deal with the actors in this controversy (Venturini et al.,2017).

In the field of architecture, disagreements are seen as an integral part of the characteristics of the practice of architecture. The words controversy is the best way to describe many issues that architects, administrators, urban researchers and citizens also have to deal with on a daily basis to know the success or failure of any design or architectural issue. Albena Yaneva describes the controversy as complex relationships that include all kinds of actors. There are not only human and non-human entities, but they are divided into three types: individual or group actors, institutional actors, and

non-human actors, the controversy presents design and social networks in a dynamic way by presenting previous designs, proposals, community opinions, political protests, governmental and non-governmental organizations, and non-human influences such as laws, the importance of the site, and others.

Design controversies are very interesting because they open up the “black boxes” and hidden understandings about design. (Yaneva,2012). The research used the controversy maps method for the purpose of measuring the power of actors by:

1. Gathering information (city plans - conducting interviews with officials - searching in official documents related to the study area - proposed and implemented projects within the region, whether they are investment or private property of citizens - searching for articles or news related to the area on the Internet or social networking sites - survey site field).
2. Analyzing the information.
3. Including data in scripts for the purpose of display.
4. Drawing a map of the controversy.

According to the information collected and through the analysis of the controversy, the research divided the actors into three types. They were 1. actors - individuals or groups, 2. actors - institutions, and 3. non-human actors. They identify their concern or interest, as in the Table 2, and then draw a map of the controversy for the influential actors in the old city center of Nasiriyah, according to the Fig. 7.

Table 2. Actors with interests or concerns.

Source: Author, Yaneva & Heaphy (2012)

Concern or Interest		Actors - Individuals or groups	Actors - Institutions	Non-human actors
A	Profitability	Investors	Local government	City General Administration
B	Administrative weakness	land owners	The local council and head of the administrative unit	Political goals
C	Project assignment method	Developers	Municipal	Municipal administration
D	authority dispute	Architectural and urban specialists	Urban planning	Investing
E	land value	Academics	Investment Authority	Public law
F	The exception to the laws	Consulting offices	Financial supervision	Municipal laws
G	Public interest	People's censorship	Integrity Commission	Investment laws
		The general population	Antiquities Inspectorate/Ministry of Culture	Economic factor
		The arrivals	Other state departments	Preservation and Determinants
		Donors	Engineers union	Site features
		Popular teams	Other trade unions	
		Stall owners and street vendors	International organizations	
		Civil society organizations		

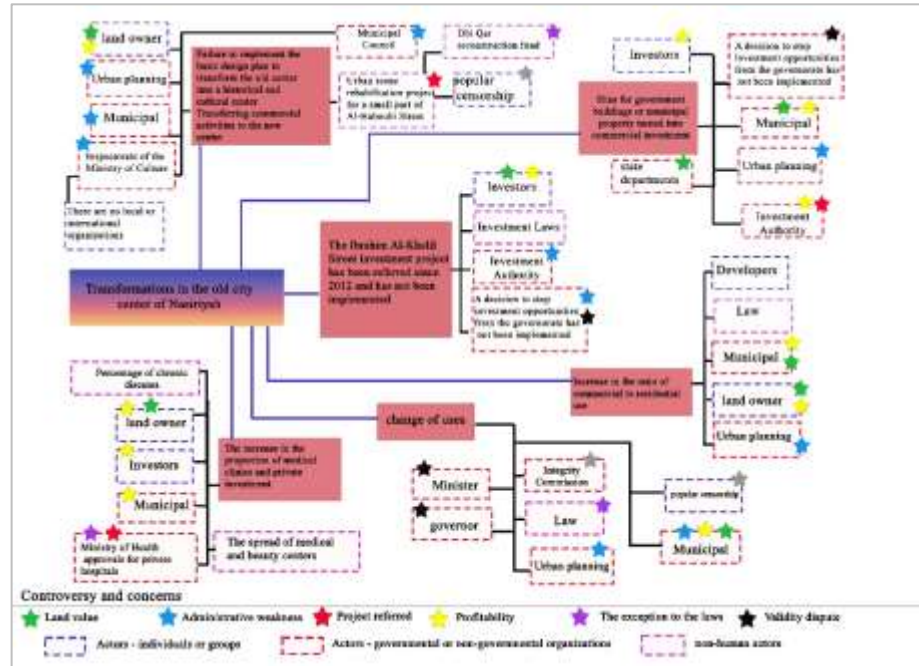


Fig. 8: The controversy map of the influential actors in the old city center of Nasiriyah
Source: Author

2. Representing Actors as a Semantic Network using Gephi

The media lab toolkit was created by Bruno Latour by developing a set of tools and programs specialized in data analysis according to the data of the Actor-network theory, used to analyze the data of websites, articles, social networking sites and others, and collecting these tools in the Media lab. Sciences website, which was opened in 2009 has received dozens of researchers looking for an empirical understanding of actor-network theory ANT, or those interested in experimenting with quantitative methods and fascinated by network analysis tools. In particular the Gephi program had a pivotal role in the Media lab toolkit (Venturini et al., 2012). Therefore, the research chose this program because it is the closest to representing the controversy map, according to the experience of Albena Yaneva and her team in her book, *Maps of Controversy in Architecture*. This is the first time that this program has been used locally in architectural and urban research in Iraq.

The program consists of nodes (a word or group of words), and edges linking the nodes with relationships (relations), which usually indicate the common repetitions of words or terms contained in the same document, paragraph or text. If we have a text network, it can be visualized in Gephi. The program gives a dynamic shape to the graphics by showing the actors related to the concern or interest. Unlike the usual controversy mapping that draws an analysis manually, in this animation, the space between the actors has a meaning. The actors who share more phrases appear closer to each other. Actors are more likely to worry, if they are very active in discussing that concern or interest. A semantic network diagram shows what terms are most commonly used in a controversy and how they relate to each other, helping to discover topics in the text, from the subtle to the general topics discussed in the documents (<https://gephi.org/>).

After the actors were identified through the controversy map and categorized into three groups, the actors were represented through the semantic network in the Gephi program, and according to the steps below:

- 1- Converting the data resulting from drawing the map into a table in Microsoft Excel, through which it identifies groups of actors according to their concerns, discussions or interests, and exporting it in (csv) format.

- 2- Open the .csv file in the Gephi program.
- 3- The network appears in black and is a system of nodes and links. In order to differentiate them according to the size and number of links, the tabs for each one is used. The most connected nodes take on a darker color and a larger size than the others, as well as for the stronger link.
- 4- For the purpose of knowing the extent of the convergence or divergence of the relationship of the actors, any type of algorithm is used in the layout tab that controls the convergence, spacing and overlap between the nodes, thus changing the shape of the network.
- 5- To show the final shape of the network, one goes to the Preview tab at the top of the screen and control the shape of the network links in a curved or straight shape, the size of the fonts. Then export the file as an image or pdf, as in Figs 7, 8 and 9, which illustrates multiple perceptions of the network within the Gephi program. Fig. 10 which shows the final shape of the network after exporting.

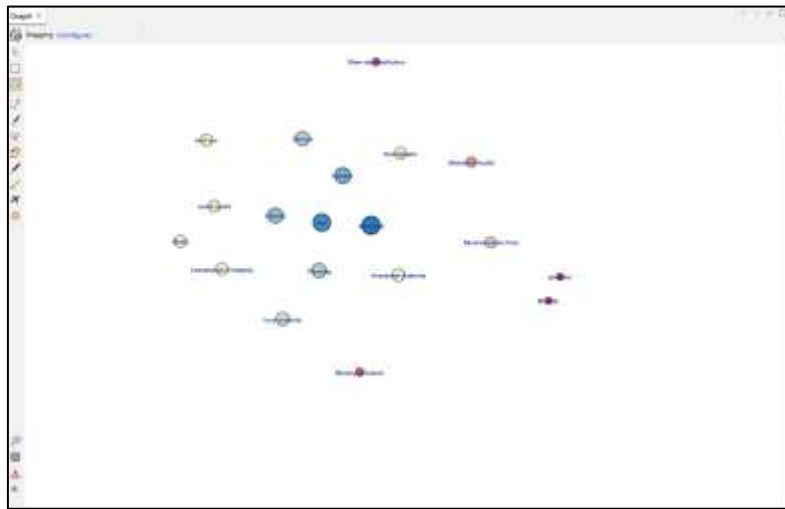


Fig. 9: Show and hide the links (edges) between the nodes
Source: Author using Gephi program

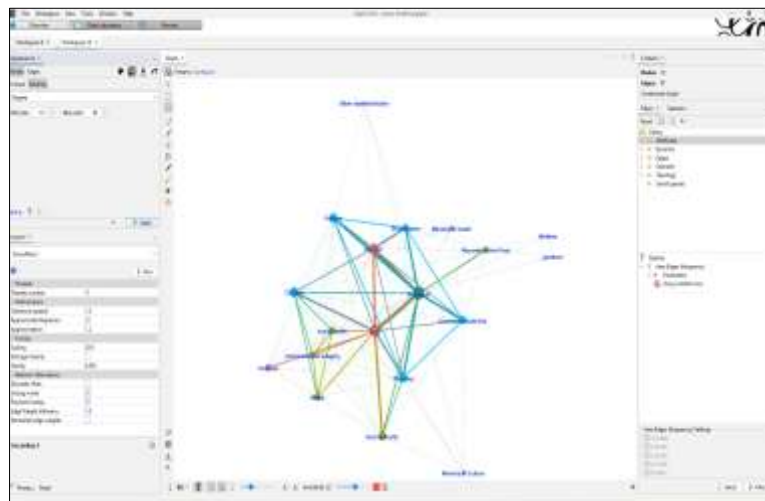


Fig. 10: The use of colors to distinguish nodes and edges, where the research used the gradient method according to categories and the use of algorithms to change the shape of the network in Gephi.

Source: Author using the Gephi program

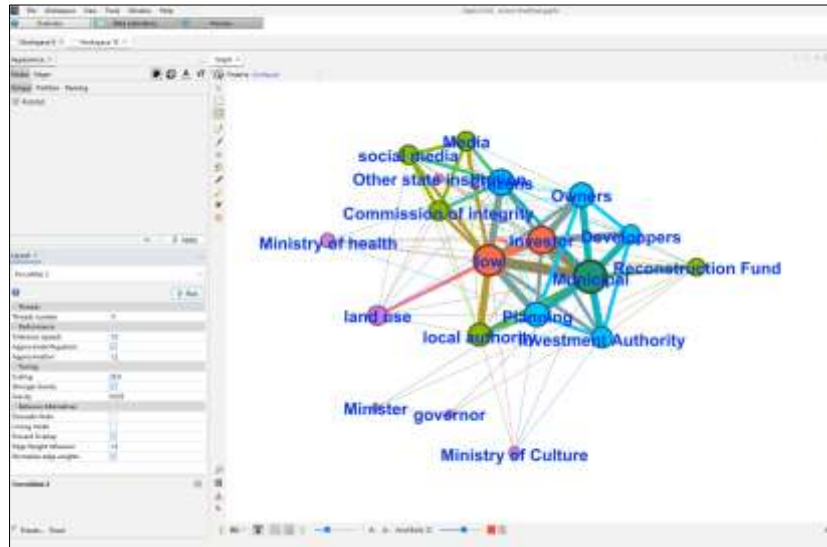


Fig. 11: Activating the property of closeness in gravity which brings the actors close to each other greatly.
Source: Author using the Gephi program

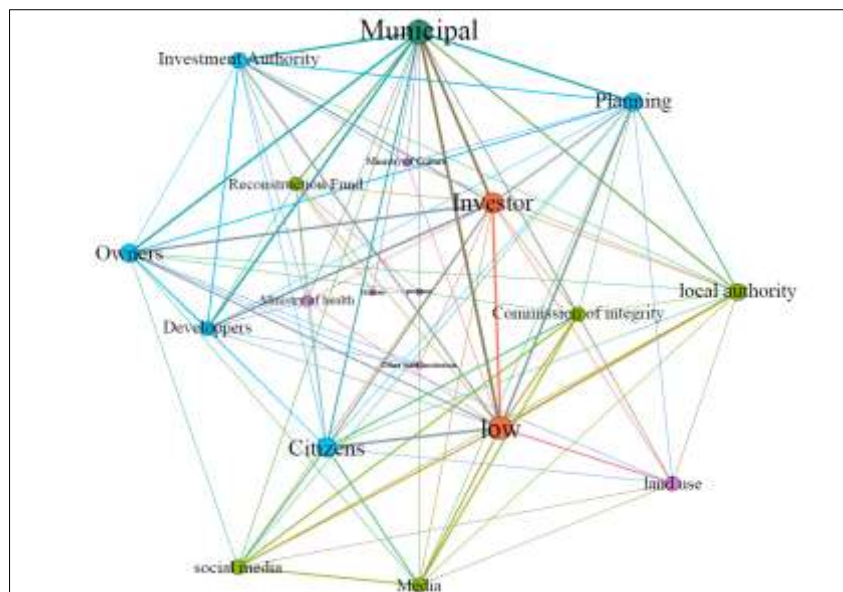


Fig. 12: The final form of the network after exporting from the Gephi program shows the use of straight lines to connect the nodes to give a different shape to the network. The dark-colored connections indicate a strong link between the actors.
Source: Author using the Gephi program.

The Measurement by Using Powergram

The research adopted the Powergram matrix, which links the actors and the elements of the urban environment as a measurement mechanism, the purpose of which is:

Determining the will of the actors, and the forces controlling the transformation process through their impact on the transformation of urban morphology elements and their impact on urban decision-making related to the establishment of events within the old city center. Powergram has been developed to suit the research need. Based on the descriptive analysis and the stage of collecting information on the controversy, and the data of the Actor-Network theory (the actors are human and non-human entities), the research used two types of matrices:

The first: measuring the impact of human actors. According to the vocabulary reached when classifying urban wills: The government and institutional will, the will of the private sector and investors, the will of elites and academics, the will of independent and semi-governmental bodies, the popular will, the will of arrivals, the charitable and voluntary will. Dividing it into secondary vocabulary according to the actors who were reached in the stage of descriptive analysis and gathering information on the controversy, on the elements of the built urban environment on the one hand, and urban decision-making related to the establishment of events within the old city center. This is illustrated in the Table 3.

Second: Measuring the influence of non-human actors. According to the vocabulary that was reached from the study of non-human actors who were reached in the stage of descriptive analysis and gathering information about the controversy. They are: Investment, public law, exceptions to laws, municipal laws, political goals, economic factor, general management of the city, site qualifications, and then dividing it into secondary vocabulary) on the elements of the built urban environment on the one hand and urban decision-making related to the establishment of events within the old city center. This is as in the table (a-4) and (b-4).

The method of work:

1- Drawing tables using Microsoft word, where the following symbols represent the degree of influence in terms of authority and interest. The degree of influence was measured depending on the descriptive analysis of the reality of the situation and the emergence of the role of the actors in the information and documents that were collected and analyzed in the stage of controversy analysis:

● Very Influential ○ Influential ○ Average effect + weak - No obvious interest

2- Calculate the measurement results using Microsoft excel, and represent them graphically.

Table 3: Measurement using the Powergram matrix to illustrate the impact of human actors (urban wills) on the elements of urban morphology and urban decision-making related to the establishment of events within the old city center.

Source: Author according to Sue McGlynn1993)

Table 4-a: Measurement using Powergram matrix to illustrate the impact of non-human actors on urban morphology and urban decision-making related to creating events within the old city center.

Source: Author according Sue McGlynn)

Table 4-b: Measurement using Powergram matrix to illustrate the impact of non-human actors on the elements of urban morphology and urban decision-making related to the establishment of events within the old city center.

Source: Author according to Sue McGlynn1993

Non-Physical actors	Instruments				Applicable Managerial laws						Managerial Administration								
	Urbanization in the rural environment	Investment Perspective	Institutional Law and its variables	Public Law	Exemptions to the laws	Land acquisition	Property Rights	Structure of contracting the project with the Municipality	Possibility to apply multiple laws (Private Law, Law of Urban Contract, Building contracts)	Commitment to the urban contract	Change of law	Commitment to the project with the municipality	The organization and its policies of the municipality in managing the city center life	The extent of the presence of participation for the center	Project without control				
																Urbanization in the rural environment	Investment Perspective	Institutional Law and its variables	Public Law
Dimension of the urban built environment	Urban form	Street planning	-	-	-	○	○	○	○	+	+	●	-	●	●	+	+	-	
		Service Design	-	-	-	○	○	○	○	+	+	●	-	●	●	+	+	○	
		General urban form	+	-	○	○	○	○	○	+	+	●	-	●	○	+	-	○	
	Building shape	Division of land	+	-	○	○	+	○	○	+	+	-	-	○	○	+	+	○	
		Land use	○	○	○	○	+	○	○	+	+	●	-	●	●	-	-	●	
		Parking	○	○	○	+	○	-	○	○	-	-	-	○	●	●	-	●	
		Height Mass	○	○	○	○	○	-	-	○	+	-	●	-	-	○	+	-	○
		Building mass	○	●	○	○	○	○	○	○	+	-	●	-	○	○	+	+	○
		Footcandle	-	-	-	-	-	-	-	-	-	+	●	-	-	-	+	-	-
		Building Elements: (Density, Building Material)	-	-	●	-	-	-	-	-	-	+	+	-	-	●	+	+	+
Urban space	Orientation to public space	-	-	-	-	○	-	-	○	-	-	-	-	○	-	+	○		
	Open spaces and landscapes	-	-	-	○	○	○	-	-	-	-	+	○	○	-	+	○		
	Public space	-	-	-	○	○	○	○	-	-	-	-	+	-	-	+	-		
Structure and the establishment of the city center	Land ownership	○	●	●	○	○	○	○	○	+	-	●	-	○	○	○	○	○	
	Project creation	○	●	●	○	○	○	○	○	+	-	●	-	○	○	○	○	○	

The degree of influence in terms of authority, access, and control: ● very influential ○ influential ○ average effect + weak - No obvious access

3. Analysis and Discussion of the Results

- 1- The result were derived from the preliminary descriptive analysis of the reality of the status of the old city center of Nasiriyah through a comparison between the aerial maps of 1992 and the approved basic designs for the years 1992 and 2011 and the current uses scheme according to the field survey. They showed that the orthogonal scheme of the city consisting of two main perpendicular streets: the Al-Haboubi Street, the Nile, and the four sectors had the transformations taking place in the old city center of Nasiriyah resulting from the change of land uses. The nature of the prevailing activities have been reflected in the change of the formal level (the shape of the buildings and their heights) and even on the behavior of the users, while there is no change at the level of the road network.
- 2- The time dimension of transformation after 2003 began with the changes of important administrative buildings in the region, which were either demolished or neglected, and then the disappearance of recreational and cultural use, and with gradual changes in uses after the allocation of several projects for investment. As for the private real estate, the residents gradually started converting their real estate into commercial complexes with one or two floors. Since 2016, the shift towards commercial uses has been significantly active and continue until now due to the economic developments, the movement of goods entering the country and the continuous technological development.
- 3- The prevailing character in the uses is commercial after the uses were varied according to the first plan of the city in 1996, which had very slight changes in the plan of 1992. 80% of administrative use changed, while in 80% of recreational use, no changes occurred in educational and religious use. As for the residential use, it changed by 70% towards mixed (commercial-residential), which is constantly increasing and the differences in land ownership (private property - public property) are affected by it.
- 4- The old center is moving in its transformation towards the medical use of buildings to be (a major medical center in the city). This is especially the part opposite the Al-Haboubi Hospital from the locality of Al-Saray and on the

main streets (the Nile and Al-Haboubi). The rest of the commercial uses are represented by various shops interspersed with medical activities, while the old markets maintained their commercial sites and activities, such as the Al-Abayjeh market, the Sayed Saad market, the blacksmithing workshops in Al-Seef locality, the commercial complexes in Al-Jumhuriya Street and Al-Jihad Street while the area of commercial uses. These expanded along Street 20 and the strip opposite Ibrahim Al-Khalil Street (peace be upon him), due to the presence of Haraj market there.

- 5- In terms of the elements of the urban scene, we find that the heights that prevailed in the area are two floors with a portico and the use of finishing materials and simple architectural elements. It also appears in the old buildings overlooking Al-Haboubi Square, which were recently transferred to investment. At the present time, the residential buildings range in height from 1-2 floors, as for the commercial use, 2 floors with a percentage of 40%, the height of 3 floors 35%, 4-5 floors 15%. As for the shapes of the buildings, they are variable and inconsistent and the features of the colonnaded arcades that were imposed when Al-Haboubi and Nile Streets were converted into commercial ones have disappeared. This is supposed to determine its dimensions and shape by the city's municipal council. There is no longer any interest for the consistency of the unified scene of the region. This indicates that there is no attempt to implement the municipal laws regarding the construction method and heights, except for the application of the sidewalk space law, which was confirmed by the study of the basic design of the city of Nasiriyah with regard to the specificity of the old city center and its transformation into a historical center.
- 6- Through the information that was described and analyzed based on the two measurement methods (controversy map and semantic network - Powergram), the hypothesis was verified to search and reveal the black box of morphological transformations that the old city center of Nasiriyah went through controversy, in the analysis, a classification of the actors appeared through the transformation story, as follows, which are illustrated in detail by Table (5):
 - **The obvious actor:** It has a clear influence (strong - medium) in the transformation process.
 - **The far actor:** It has a weak effect.
 - **The hidden actor:** It has an effect (strong - medium), but it is not visible, which was discovered through controversy.
 - **The archival actor:** represents all the documents and information that recorded the story of the transformation and was adopted in the controversy to reveal the transformation.
 - **The narrative actor:** The entity that discloses the contents of the black box and tells the story of the transformation.
- 7- Through the results of the two previous measurement methods, the second hypothesis of the research was verified and the wills of the actors (human actors) were arranged according to power and control over the transformation process, according to Table 6.

Table 5: The analysis is a classification of the actors according to the story of the transformation.

Note/ The effect strength of each actor was classified according to the matrices (human-non-human) and semantic network analysis.

Source: Author

Classification of actors by transformation story	The actors that fall into the classification were revealed after opening the black box of the old city center of Nasiriyah
The obvious actor	Land owners from the private and public sectors, investors, developers, municipality directorate, Urban Planning Directorate, the local government, and the investment authority, Political objectives, public law, exception to the law, bridge of civilizations, change of use, investment law and its facilities, municipal laws related to the application of sidewalk space, referred investment projects, many medical and commercial activities, administrative weakness, land price, land area, and the availability of building materials
The far actor	Architects, planners, urban designers, advisory offices within the governorate, academics, demonstrators, city notables, the general population, the unions of Engineers, other professional unions, the Antiquities Inspectorate, international organizations concerned with preservation, arrivals, and the donors Non-compliance with the determinants of urban preservation, failure to raise violations by the municipality, lack of necessary infrastructure, failure to follow up the implementation of municipal laws by the local authority,
The hidden actor	The Ministry of Health, the state departments who own the land, the media and social media that have been active recently. Project assignment method, a conflict of powers between the Ministry and the Governorate, the price of rents, the method and duration of the assignment of the Musataha, the tax facilities, the facilities provided for setting up projects, and the Dhi Qar reconstruction fund.
The archival actor	State employees interviewed, official books, current and archived city plans, basic design plan for Nasiriyah city, municipal administration law, articles and officials' statements regarding projects that have been or will be built, and all other means that document the transformation of the Nasiriyah city center used in the controversy.
The narrative Actor	It is the researcher who reveals the black box of transformation to tell the story of the transformation, those concerned with the planning side who were interviewed and described the state of transformation, the citizens.

Table 6: The arrangement of the urban wills of the human actors in the old city center of Nasiriyah

Source: Author

Time period	Arranging the wills of urban actors according to will	Its role in the morphological transformations of the old city center of Nasiriyah
2003-2021	The will of the private sector and investors	The prominent role of investors and land owners who seek profitability, in line with what is frequently required of activities, increases profits and rents of the building, which results in a change in uses or the type of activities within the buildings. In addition to the chaos in the designs of commercial buildings, the colors of the facades, and the building materials that are not suitable for the privacy of the city, in addition to their clear impact on the division of lands.

Governmental and institutional will	Municipality	Responsibility for making a decision that affects the establishment of activities within the urban environment and thus will affect the elements of the built urban environment through following up the implementation of the laws and municipal legislation in force, such as laws related to building and urban preservation - rents - musataha - organizing building permits and holding violators accountable. The municipality's clear interest in profitability and maximizing its revenues
	Urban planning	Its role is limited to applying the planning instructions for the establishment of urban activities according to the uses established in the basic design only.
	local government	Influencing through urban decision-making related to plans and project construction, there is no serious follow-up by the municipal councils or the Qaimqam regarding the application of building laws that preserve the context of the urban scene of the city, or the follow-up of the implementation of the plan to transform the old center into a historical and cultural center according to the basic design proposals.
	Investment Authority	The Investment Authority represents the link between investors and the owners of the land (whether it is public or private property) and it has nothing to do with the importance of urban preservation of the old center, as it depends on the approvals of the relevant authorities only.
	Integrity and Financial Supervision Commission	Some attempts to monitor and stop the processes of changing the use and decisions regarding the assignment of projects or actually referred.
The popular will	<ul style="list-style-type: none"> - The role of popular censorship has emerged in recent years through attempts to stop changing usage - Repeated appeals and criticism of residents to find solutions to the problems of the old city center (such as traffic congestion caused mainly by the increase in the proportion of commercial and medical use) 	
The will of elites and academics	The role of elites specialized in the architectural or planning aspect in urban decision-making and architectural and urban planning is weak due to the lack of consulting offices with architectural specialization in the city. The fact that the specialty of architecture is not present at the University of Dhi Qar, which is the reason for the process of formal transformation towards chaos in the production of architectural forms and thus the unified urban scene.	
The will of the independent and semi-governmental bodies	A weak role for these parties in the urban decision-making process, especially professional or international organizations interested in urban conservation, has resulted in the landmarks of the old city center of Nasiriyah have largely disappeared.	
The charitable will and the will of the donors	Weak effect of donating part of the property to the public interest or other charitable work such as the maintenance of heritage buildings or mosques.	
Arrivals' will	It does not have any impact on the transformation process, either negative or positive, due to the lack of arrivals to the city, as it is not a tourist city or a city distinguished by the abundance of job opportunities in it.	

Conclusions

- a. The processes of morphological transformation of city centers can be traced by revealing the contents of the black box that contains the causes of transformation from human actors (urban wills) and non-human actors and the relationships and media that link them.
- b. Controversy is one of the best processes through which it is possible to reveal the complex relationships between the actors causing the transformation and the path of movement, words and actions of the parties within the network. It is of interest to researchers in the fields of the network - the actor, because it opens the black boxes and reveals the hidden actions that contributed to the transformation process.
- c. The software launched by the media lab toolkit contributed to facilitating the process of mapping the controversy using the semantic network system that shows the locations of the actors within the controversy and the path of their movement within the network through divergence and convergence during the controversy process. The number of links with which each actor is linked, and the strength of these relationships are relevant.
- d. Diagnosing the concerns or interest prevalent among human actors, resulting from the continuing controversy about the region, contributes to tracing the role of human and non-human actors, and then arriving at the type of dominant urban will and its strength and measuring the type of transformation.
- e. The indicative diagrams give an illustration of the relationships between actors according to interests, whereas, Powergram matrix gives the influence of actors on the built environment and can be developed to include human actors, (wills) and non-human actors, and through its results, urban wills can be arranged according to their strength and influence in the transformation process.
- f. The difference in the arrangement of wills according to power and control has given a different result. After the governmental and institutional will in the old city center of Nasiriyah was dominant by issuing the urban decisions and obligating all parties to implement them and not to exceed them before 2003, control became in the hands of investors and the private sector. This created chaos and urban problems and the disappearance of the features of the old center because their interest was only profit.

The study of morphological transformations in the old city center of Nasiriyah showed the following.

That the auxiliary factors in the formal transformations and the orientation towards uses and activities represent

- a. the interests of the actors towards the economic aspects and the desire of the owners of money and owners, and other factors such as
- b. the administrative weakness of the Directorate of Municipality and Urban Planning and the local authority in preserving the old center.
- c. the method of project referral, exceptions to the laws, the conflict of powers and responsibilities between the appointed departments on the one hand and the central and local government on the other hand,
- d. the importance of the value of the land for the owners and investors, and the preference for private interest and preference for profits at the expense of the public interest.

The research found through the analysis that the network - the actor (human-non-human actors) is like a narration that can describe and explain the transformation process. Therefore, the transformation is a black box, because most of the

transformations are not accurately predictable, or they occur as reactions and immediate developments.

By analyzing the controversy, it is possible to categorize the actors according to their role in telling the story of the transformation into a clear actor influencing the transformation process, (a) a far actor with a medium or weak influence, (b) a hidden actor who has a strong but invisible influence, (c) an actor who archives all documents and information that were approved to archive the story of the transformation (d) narrative actor is the party that discloses the contents of the black box and tells the story of the transformation.

Recommendations

- It is necessary for the institutions concerned with urban planning to study and analyze the active networks in the city of all kinds and components, and to diagnose their role and impact on the future of the city centers.
- It is also necessary to study the effect of changing the arrangement of urban wills in city centers, and its clear impact on morphological transformation processes if it is negative (for the purpose of addressing the reasons for the control of these parties and their interests that led to the transformation and control or prediction), or positive (for the purpose of developing the city center in a better way).
- It is meaningful to benefit from the digital programs adopted in the analysis of active networks based on the analysis of controversy through semantic graphics, and their introduction in the architectural and urban fields.

References

- Salman, M. (2018) Formal Transformations in Urban Centers (Al-Mansour Case Study), Unpublished Master's Thesis, Department of Architecture, University of Technology, University of Baghdad, Iraq.
- Owaid, H. (2013) Morphological transformations in the centers of historical cities, unpublished doctoral dissertation, College of Engineering, University of Baghdad, Iraq.
- Bentley, I. (2002) Urban Transformations Power, people and urban design. London and New York: Routledge is an imprint of the Taylor & Francis Group, First published. Retrieved from. <https://www.routledge.com/Urban-Transformations-Power-People-and-Urban-Design/Bentley/p/book/9780415128247>
- Al-Hinkawi, W. Alkubaissy, Sh. (2017) The impact of planning policies on the cities' morphological transformations city of Kirkuk as a case study, International Journal of Civil Engineering and Technology (IJCIET), Volume 8, Issue 4, pp. 1104–1116
- Bosselmann, Peter, (2009) Urban Transformation: Understanding City Design and Form, Island Press, Washington. Covelo. London.
- Maculan, L., Moro, L. (2020) Strategies for Inclusive Urban Renewal, Sustainable Cities and Communities, Encyclopedia of the UN Sustainable Development Goals. https://doi.org/10.1007/978-3-319-71061-7_93-1
- Al Ani, M, Al Wahab, A. (2020) Utilizing participatory urban decision-making model to support smart growth strategies in Baghdad City, Periodicals of Engineering and Natural Sciences ISSN 2303-4521 Vol. 8, No. 2, pp.1141-1151.
- Xenidis, Y. (2006) A Proposal for a Model to Support Decision Making in Urban and Regional Development and Management. Proceedings of the 5th WSEAS International Conference on Environment pp. 125-130. Venice, Italy: Ecosystems and Developmen. Retrieved from

- <https://www.semanticscholar.org/paper/A-Proposal-for-a-Model-to-Support-Decision-MakingXenidis/a5599bbd1aae35f91668a4346e564a565e9a7ed2>
- Latour, B. (1996) On actor-network theory: A few clarifications, *Jahrg. H.*, pp. 369-381.
- Callon, M. (1986) The Sociology of an Actor-Network: The Case of the Electric Vehicle, in M. Callon, J. Law & A. Rip (eds), *Mapping the dynamics of Science and Technology*, The Macmillan Press Ltd, London, pp. 19-34
- Latour, B. (1999) on recalling ANT, *The Editorial Board of The Sociological Review*. Published by Blackwell Publishers, P:15-25.
- Murdoch, J. (1998) The Spaces of Actor-Network Theory, *Geofimm*, Vol. 29, No. 4, pp. W-374.
- Stalder, F. (1997) Actor-Network-Theory and Communication Networks: Toward Convergence. Retrieved from http://felix.openflows.com/html/Network_Theory.html
- Boelens, L. (2010) Theorizing practice and practicing theory; Outlines for an actor-relational-approach in planning. *Saje journal*, 7-10. Retrieved from <https://journals.sagepub.com/doi/abs/10.1177/1473095209346499>
- Cvetinovic, M., Nedovic-Budic, Z., & Bolay, J. (2017, june) Decoding urban development dynamics through the actor-network methodological approach June 2017. *Geoforum*, 82, pp 141-157. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S0016718517300581>
- McGlynn , S., & Hayward , R. (1993) *Making Better Place: Urban Design Now*. Joint Centre for Urban Design, pp 5-7.
- Al-Shammari, H. A. (2017) The urban conflict of wills and its role in excluding community participation and generating turmoil in (decision-making and place-making) within historical cities. *Journal of Engineering and Sustainable Development*, 21(2), pp 4.
- Nasiriyah City Development Strategy, Phase Two, 2008. pp. 21.
- Al-Wardi, A. (2003) *Social Glimpses of the Modern History of Iraq Part two*. Baghdad-Beirut: Dar Bahjat al-Maarifa edition. Retrieved from <https://www.bookleaks.com/files/fhrst4/141.pdf>
- Al-Sahlani, S. J. (2019) The Impact of Urban Growth on Changing the Administrative Boundaries of the Residential District in Nasiriyah City and its Future Prospects for the Period (1957-2017). *Wasit Journal for Human Sciences*, 15(44), 113. Retrieved from <https://www.bookleaks.com/files/fhrst4/141.pdf>
- Nasiriyah City Development Strategy Sixth Phase 2008, Final Report, p. 55.
- Venturini, T., Ricci, D., Mauri, M., Kimbell, L., & Meunier, A. (2017) *Designing Controversies and Their Publics*. HAL, 74. Retrieved from <https://hal.archives-ouvertes.fr/hal-01672300>
- Yaneva, A. (2012) *Mapping Controversies in Architecture*. UK: Printed and bound in Great Britain by the MPG Books Group. Retrieved from <https://scholar.google.com/citations?user=kzbaZhwAAAAJ&hl=ar&oi=sra>
- Yaneva, A., & Heaphy, L. (2012) Urban controversies and the making of the social. *Architectural Research Quarterly*, 16(01). Retrieved from http://journals.cambridge.org/abstract_S1359135512000267
- Venturini, T., & Guido, D. (2012) Once Upon a Text: an ANT Tale in Text Analysis. *Sociologica*. Retrieved from doi:10.2383/72700