Research Article

The Sources of City Knowledge in Built Environment

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ABSTRACT

Cities in the urban studies consider as the place of urban community; contains people' daily life, cultures, proprieties. Their behaviors and activities formulate city shape and structure. Different sciences studied cities; each one with a different view points and consideration. But they all have similarities in some sides; and complement each other.

This paper define and explain city sciences which are linked with Architecture and built environment professions; determinate their concerns, differentiations and the relation between them. This could be advantageous in general city knowledge's; help in designing educational programs; and preparing city science disciplinary courses in Architecture and Built Environment; and also, in determining urban planning process and its relevant issues; specially in arranging and managing city development projects responsibilities and roles; and this identified the confusion between professions in Built Environment applications.

1. Introduction

The built environment is the human made surroundings that provide the setting for human activities, in forms for living, working and entertaining, ranging in scale from buildings to neighborhoods and cities, that can often include supporting infrastructure such as water supply, or energy networks.

A city as a human settlement is a part from the built environment, its relatively large and permanent urban settlement, acts as a center of economic production and consumption, arena of social networks and cultural activities, and as a seat of government and administration. Cities generally have advanced systems for sanitation, utilities, land usage, housing, and transportation. The concentration of development greatly facilitates interaction between people and businesses, benefiting both parties in the process.

The spread of urban influences into surrounding rural areas and, in particular, the spatial expansion of cities have introduced concepts such as urban region, metropolis, and conurbation. Issues appropriate to this level of analysis include the ecological footprint of the city, land-use conflict on the urban fringe, growth management strategies and forms of metropolitan governance.

Cities' occupy a distinctive role as political and financial control centers. Local governments have a direct influence on urban decision-making and management, but as a part from the country general planning mechanism. The nationally defined goals established in pursuit of general objectives that extend beyond the urban concerns, and the national level policy guidelines incentives in the shape of competitive grants and financial between branches. So, cities were encouraged to become more competitive to attract inward investment.

In studying the contemporary city, one must remain aware of the relationship between global and local forces in the production and re-production of urban environments. The need for such a perspective is reinforced by the process of globalization, which, as we have seen, emphasizes the linkages between different 'levels of analysis'. In particular, the global and the local must be regarded not as analytical opposites but as two sides of the same coin Moughtin *et* (1999).

City concept has been well received in urban sciences theory; concerns in multiple relevant subjects: the Architects; focus on symbolism, the Engineers; focus on quality standards, the Urban planners; focus on land use and zoning, the Landscape artists; focus on aesthetics, the Environmentalists; focus on depletion of natural resources

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and climatic consequences, the Socialists; focus on-social cause groups, the economically marginalized and saving residential zones from degradation of neighborhood character, the Economists; focus on the ability to continuously generate wealth, the Politics and Law men; focus on decisions mechanism in cities, and the Globalists; focus to extends city territories into global city regions.

2. Methodology

In this paper the researcher want to formulate a clear perspective about all the sciences that contributed to the profession of Built Environment, which are associate in making cities; also the role of each one of them and its relation with others. So this paper is in two stages, first, definitions for the sources of city knowledge in the field of Built environment; and then comparison between city sources of sciences in factors determine by the researcher. This is follow by conclusion and recommendations.

3. Study:

3.1. The sources of city knowledge in the field of Built environment

The Built Environment sciences which contributed in the process of making cities, are in two levels of intervention: the Macro level; which is planning big scale activities that operates at global, national, regional and local levels; and these sciences are: spatial planning, urban planning, regional planning,...etc; and micro level, which is design activities, including: architecture, landscape architecture, urban design, ...etc.

In the macro level of intervention in city making; some sciences specialized in one subject related to the volume of problem as: environmental planning, transportation planning, social planning and so on. But the micro level sciences are more comprehensive related to their interests.

The sciences and professions in Built Environment could be distributed to planning and designing disciplines. The design include: architecture, landscape architecture and urban design; and the planning include: spatial planning, regional planning, and urban planning Lang and Jon (2005). These sciences are illustrated bottom:

3.1.1. Design sciences:

a)   **Architecture:** in relation to buildings, architecture has to do with the planning, designing and constructing form, space and ambience that reflect functional, technical, social, environmental, and aesthetic considerations. It requires the creative manipulation and coordination of material, technology, light and shadow. Architecture also encompasses the pragmatic aspects of realizing buildings and structures, including scheduling, cost estimating and construction administration. As documentation produced by architects, typically drawings, plans and technical specifications, architecture defines the structure and\or behavior of a building or any other kind of system that is to be or has been constructed. Architectural works are often perceived as cultural symbols and as works of art.

b)   **Landscape architecture:** Landscape design is concerned with the design of outdoor public spaces. It is intended to achieve environmental, social/behavioral, or aesthetic outcomes. It involves the systematic investigation of existing social, ecological, and geological conditions and processes in the landscape, to decide the interventions that will produce the desired outcome. The scope of the profession includes: urban design, site planning, town or urban planning, environmental restoration, parks and recreation planning; visual resource management; green infrastructure planning and provision; and private estate and residence landscape master planning and design; all at varying scales of design, planning and management.

c)   **Urban design:** Urban design is the art of creating and shaping cities and towns. It concerns the arrangement, appearance and functionality of towns and cities, and in particular the shaping and uses of urban public space. It has traditionally been regarded as a disciplinary subset of urban planning, landscape architecture, or architecture and in more recent times has been linked to emergent disciplines such as landscape urbanism. However, with its increasing prominence in the activities of these disciplines, it is better conceptualized as a design practice that operates at the intersection of all three, and requires a good understanding of a range of others besides, such as real estate development, urban economics, political economy and social theory.

3.1.2. Planning sciences:

a)   **Spatial planning:** refers to the methods used by the public sector to influence the distribution of people and activities in spaces of various scales. Planning professional disciplines involve spatial planning include: land use planning, urban planning, regional planning, transport planning, environmental planning, economic planning and community planning. Spatial planning takes place on local, regional, national and inter-national levels and often results in the creation of a spatial plans like, region, urban structural plans and even detailed plans of city components.

b)   **Urban planning:** (urban, city, and town planning) is a technical and political process concerned with the control of the use of land and design of the urban environment, including public services, infrastructure and transportation networks, to guide and ensure the orderly development of settlements and communities. Urban planning can include urban renewal. It concerns itself with research and analysis, strategic thinking, urban design, public consultation, policy recommendations, implementation and management. The goal of city planning is to protect widely shared public values such as sustainable development, health, safety, environmental quality, social equality, and aesthetics.

c)   **Regional planning:** the Regional\spatial planning gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an inter disciplinary and comprehensive approach directed towards a balanced regional development and the physical organization of space according to an overall strategy.

3.2. Comparison between city sources of sciences:

In this section the city sciences which are defined above will be compared in accordance of their roles and influences in a city composition, using four parameters; these are: matters, interruption, necessity, and limitation, the selection of these factors is because such factors will enable systematic definition of each science, its position, and its overlap and interrelation with other categories of sciences. For summarizing the paper considered the similarities between city sciences, so they grouped as follows:

a)   Architecture, Landscape Architecture, and Urban Design; as city forms and images concerns.

b)   Spatial Planning, Urban Planning, and Regional Planning; as structure and land uses concerns.

c)   Urban Geography; as a wide scope of concerns, giving opportunity to consider the global scale.

d)   Other related sciences; out of the built environment professions but with partial relevant topics, like; Economy; Technology; Demography; Politics and law; Sociology; Culture; Environment and ecology; and Philosophy.

3.2.1. Matters:

Each science has especial concerns formulated to its contents and disciplines, in this topic we will illustrate each sciences main matters.

a)   **The Architecture;** creates the definite space of activity; Buildings as objects rather than as space makers; also concerns design of complexes of buildings and what cities and neighborhoods might be like. **Landscape architecture;** Introduce us to understanding of nature as the background and base for all human activities; it describes the planning constraints imposed by the forms, forces, and feature of natures and our built environment. **Urban design;** is shown in all aspects of the physical environment, including form, space, movement time, activity pattern and setting; involves what the place looks like, how it feels, what it means, and how it works for people who use it; ranges in scale from parts of an environment, such as a street scape, to the large wholes of districts, towns , cities, or region.

b)   **Spatial planning;** organizes spaces in city and impacts on land values; also define the role of location in spatial distribution. **Urban planning\ City planning;** embraces the organization, or conscious influencing of land-use distribution in an area already built-up or intended to become built-up; determines primarily by framework of public infrastructure and regulations administered by the city, state, and federal governments. **Regional planning;** deals with the efficient placement of land use activities, infrastructure, and settlement growth across a larger area of land than an individual city or town. That in order to assure, the orderly and harmonious development of the urban areas of the state, and to provide for the needs of future generations.

c)   **Urban geography;** provides an understanding of the living environments of a majority of the world's population, explains the distribution of towns and cities, and the socio-spatial similarities and differences that exist between and within urban places. Cities exhibit common efficiency problems to varying degrees (ex: pollution, unemployment, poverty...).

d)   **Other related professions:**

Economy; economic forces are the dominant influence on urban change, this involved changes in what was produced, how it was produced, where it was produced, and the using of revenues and profits. **Technology;** technological changes, are integral to socio-economic changes: influence the urban structure, pattern of urban growth and the pace and character of urbanization and urban change. **Demography;** demographic changes and movements of people into and out from cities, shape the size, configuration, socio-economic composition of cities. **Politics and law;** cities reflect the political ideology of their society, this is demonstrated by managing cities, the development of new towns and reorganization of existing cities. **Sociology;** the human inter relations and the primacy of social class give way to a multiplicity of struggles and confrontations, involving a wide range of constituencies and social actors, relating to the cityscape. **Culture;** the community living behavior and celebrates variation in urban environments, as a social difference whether expressed in architectural or social terms. **Environment and ecology;** act as the major concerns in the human settling system at the planetary scale and at the local scale. **Philosophy;** includes human ideologies and thoughts; like: idealistic imaginary designs (ex: utopian thoughts) as well as actual built environments theories (ex: related to math and physics roles).

3.2.2. Interruption:

The main point of this study is the city, so we will discuss the interruption of each science in city, how it can affect city and how city can affect it.

a)   **Architecture;** in city environment the architectural products including; building's fabrics, services, colors and scents must interact harmoniously with us and the environment. Architects are inventing the urban landscapes, creating the features of which will be mobility, transience, permeability, interaction, pleasure, sociability, creativity, stimulus, transparency. **Landscape architecture;** introducing conceptual planning, as a diagram of fitting relationships of area, to structure of area to area, and of all the lay of land to total environment. **Urban design;** blends architecture, landscape architecture, and city planning together to make urban areas functional and attractive. It seeks the idealization and aesthetics in urban design form; concerned with the quality of the public realm of cities and other human settlements. It is concerned with the design of specific products: new towns, new suburbs, new precincts of cities and suburbs, urban renewal, and urban squares, and streets.

b)   **Spatial planning;** there are three approaches to study spaces: space defined by plan (relations in entrepreneur process), space as a field of forces (poles and nodes fields of activities), space as a homogeneous aggregate (related to the composition of the partial units; in comparing with other units and the relation between them). **Urban planning;** is concerned primarily with the distribution of land uses in relationship to transportation networks. It has focused on economic development regardless of the physical design consequences. Embraces the organization, or conscious influencing of land-use distribution in an area already built-up or intended to become. Policy planning, Community participation, and zoning are the most instruments available for controlling urban development. **Regional planning;** concerns cities as part from the region; study the continuing growth of the region and urban centers beside region capabilities; dealing with social and economic issues affecting a geographic region; (the rural development; balancing development in region; and economical and social context as palaces in the city and locations in the region). All these in a long-term, general plan for the physical development of each of the region's areas that can serve as a guide to the affected local governmental units within such areas and to the state departments and divisions that are charged with constructing state-financed public works within such urban areas.

c)   **Urban geography;** identifies and explains the spatial distribution of towns and cities, studies the systems of whole cities, the socio-spatial similarities and contrasts that exist within each one and between them, the internal structure of urban places, and the outcome of a host of public and private economic, social, cultural and political forces operating at a variety of spatial scales from the global to the local.

d)   **Other related professions:** Economy; the importance of the economic sector put it under direct interest from the government ore; in shape of planning, controlling, and regulating. Other interest groups are the private sectors and the international agents with the increasing of globalization. The economic system reflects in: the number of population; the using of resources including land; (the shape, function, and life style) controlling within the city; beside city community as: the age rates, life expectancy, migration, education system, income rates, consumption attitudes. **Technology:** technological changes, which are integral to economic change, also influence the pattern of urban growth and change. Innovations such as the advent of global telecommunications have had a marked impact on the structure and functioning of the global economy. **Demography;** the urban demographic changes have different reasons: into cities with expectations of improved living standards for poor people; and sub urbanization or ex-urbanization for wealthy people to achieve ' good life' there. Over grade increasing in cities dwellers cause: changes in the local environment, congestion, and squatters residences round cities. **Politics and law;** the political ideology impact in the city composition, in each city high priority was afforded to urban industrial development and the construction of large estates of public housing. The planned socialist city was intended to promote national economic development and to foster social and spatial equity in collective consumption. Capitalist tendencies such as social differentiation, and sub urbanization. **Sociology;** social attitudes may influence the demographic composition of cities (ex: abortion). Popular attitudes towards ethnic or lifestyle minorities can determine migration flows between countries and cities, as well as underlying patterns of residential segregation within cities, which has been facilitated not only by the economic advancement of individuals and households but by changing social attitudes to: education, employment, ecology, and residential status. **Culture:** have flourished in some urban settings: inner-city areas energized by international style; and other alternative lifestyle communities such as the ethnics districts. The most significant of cultural changes is the increasing of gap between rich and poor in cities. **Environment and ecology;** the impact of the built environment and the human interruption in the planet; and the impacts of environmental changes create by patterns of urbanization and urban change. **Philosophy;** toward the city of future; solving the recent life problems; and the challenge of creating new superior lives and settlement.

3.2.3. Necessity:

The necessities of discussing city in each category of science, are related to the scope and orientation of vision in architecture and built environment.

a)   **Architecture;** some buildings ideas have been based on empirical observations about cities, this increase the understanding of how to get projects initiated and carried through as sense of an individual idealism linked with surroundings. **Landscape architecture;** helps bring people, their structures, activities, and communities in to harmonious relationship with nature and landscape, and provides guidance in the creation of more efficient and pleasant places and ways within the context of the city and region. **Urban design;** can enhance the function and beauty of cities with careful consideration of site location, building form, visual characteristics, relationships between elements, public releam, and the design of public spaces and the hierarchy between public, semi public , and private space.

 b)   **Spatial planning;** formats the economical physical composition within city, defines the using of each area in land to make multiple profits, creates the maximum interaction with the lowest average of cost, explains the concept of central spaces, economical and human activities in the city, and balances developing regions. **Urban planning;** deals with design of the built environment from the municipal and metropolitan perspective; city's physical character which is defined by the nature of its streets, squares and other open spaces in terms of how they are shaped by enclosing elements, and the determination of the land uses to increase city efficiency and quality. **Regional planning;** Gives the comprehensive view to the city planning, management and the hierarchy of authority's intervention, organize regional interruptions and application of the national strategically plan in economy and growth, also study the centrality of the city as nodal points and growth poles in region and country.

c)   **Urban geography;** provides an understanding of the living environments of world's population prospects for different peoples and places, a full understanding of the

urban world and of its problems, the importance of local and regional variations in the nature of urbanism within the overarching concept of global and local, appreciation of the causes and consequences of urban processes and patterns (urban growth and sprawl), studies population concentration, infrastructure, economy and environmental impacts, and study multitude of activities and processes that take place in the urban ecosystems every day.

d) **Other related professions:** Economy; economic forces are regarded as the dominant influence on urban change. Modification of the urban environment occurs most vigorously during up cycles of economic growth. Cities are major generators of economic activities, offering employment opportunities, education, health, and other social services. **Technology;** technological changes that directly affect urban form: transportation technology promoted sub urbanization, high-speed elevator developed skyscrapers, and information technology changes the spatial composition of the city. **Demography;** demographic changes are among the most direct influences on urbanization and urban change. Movements of people, into and out from cities, shape the size, configuration and social composition of cities; and increase or decrease city economy. **Politics and law;** within societies: changes in political ideology and subsequent modifications of economic and urban policy have had major impacts on city development. Such as reductions in public expenditure and increased dependence upon the private sector in urban development. **Sociology;** the concept of livability and utopia is to organize social life and community. The complex interweaving of history, race, nation, wealth, power, identity and territory are important for our deliberations on the relationship between spatiality and power. **Culture;** there is growth of international modern culture and cultural industries (related to media and the arts). From other side there is regeneration and place marketing of historic urban districts. **Environment and ecology;** cities are the main consumers of the natural resources and the main producers of pollution and waste. Environmental affect local weather patterns and requires a response from cities in terms of urban policies, regulations, and infrastructure. **Philosophy;** the desire to improve urban quality of life and prognosticate on future urban form remains a powerful element in urban context.

3.2.4. Limitation:

Limitation gives us the influence of each science in cities study, and how can we measure each one of them and put it in its correct position.

a) **Architecture;** Deal in more detail with a smaller scale of development. Still architecture in limited comprehensive view for the individual projects. The need for intensive concentration of buildings will be challenged by New Age communications technology. **Landscape architecture;** Design vary from site to site in accordance with the variation of the landscape characters. **Urban design;** Deal in more detail with a smaller scale of development. The primary concern of urban design has been with the physical form of the city, there is increase in importance of the overall design of human settlements, and the quality of the physical environment. urban design is not primarily an individuals act, but is acivic, collective activity

between public and private. Also the proposals for ideal cities found a round the world in different visions of views.

b) **Spatial planning;** the relation between location and transportation change by the globalization economy, this decreasing the importance of concentration of the activities, replacing the cost of production with the cost of transport and communication in calculation the commodities. **Urban planning;** is a futurist profession, marshaling of resources and knowledge to prepare us to make prudent decisions for our future, futuristic vision of planning faced by the uncertainty. City planning neglected the built environment in its deliberations of urban futures, and the biological health of cities depends on the interactions between the natural and the artificial. **Regional planning;** the theoretical frame of the regional planning is in the statistical and numerical context differentiate from making city professions. Regional planning deals with a larger environment, at a less detailed level. Complicated arrangements that balancing a free market, a pluralistic society, and the rights of the individual on one side, and the best interests of the community on the other.

c) **Urban geography;** the diverse nature of urban environments is illustrated at the macro scale; the differences generate particular problems in each sphere. High generalization in principles to determine the location of human and physical characteristics. There is interconnectedness of global urban society as a result of globalization; the dialectic relationship between global and local processes in the construction and reconstruction of urban environments; and there is importance of local and regional variations in the nature of urbanism within the overarching concept of a global economy and society.

d) **Other related professions:**

Economy; the transition to advanced capitalism was accompanied by an increasing globalization of the economy. Urbanization cause number of economical problems, the character and size of these problems and their solutions vary considerably between different parts of the world. **Technology;** a new 'genre' of city theorizing is being developed in relation to the arrival of communication and information revolution. The virtual reality links between subjectivities and cyberspace, the decent ring of the social is reproduced within the Internet, where a series of sites offer any number places as homes, markets and other firms; **Demography;** Demographic changes are related to other factors such as economic growth or decline, and political change; induce political attempts to restrict migration, whether within the country to control ' Over-urbanization' or between countries, as along the borders. **Politics and law;** the local-regional political changes can have a global impact, related to globalization process. A political decision by central government to attract inward investment by foreign investors can affect the future economic prosperity of a city and its residents. The formulation of urban policy may be influenced by political forces such as the opposition of voters for any city services decision. **Sociology;** The sense of belonging offered within the diverse spaces of cities is, in part, constructed in relation to the sense of identity that

cities offer to the strangers and locals within the cityscape. Cities are not 'invented' by spatiality's but by time, different conceptions are bound and re-invented through. The new technologies deconstruct spatial boundaries and work across conventional geography. The globalization of local communities, and the division between the "imaginary" and the "real" needs to be crossed. **Culture;** alternative and substitutes between different cultural compositions. The western culture influences in the global world, versus the third world local capabilities and different development situations. **Environment and ecology;** there are massive volume of the environment researching factors, for clarity each of environment factors' need examined independently, but in practice, they are interrelated and operate simultaneously to influence urban change. **Philosophy;** The implications of philosophical perspectives face the complicated real time situation. Difficulties in transform it from the religions; ideals, morals, ethics, values and political order to the physical planning orders.

4. Conclusion:

In this paper we illustrate the sources of the city knowledge as sciences; and make a comparison between them; as definition, matters, interruption, necessity and their limitation. We find that:

- Architecture and Urban Design are the same; one science, their differentiation is from the volume of projects.
- The Landscape Architecture and Spatial planning are illustrated in City Planning as roles and part from its process.
- An important part of the Urban Geography are fundamental to discuss in the Architecture and Built Environment; consider as basic information which must be known.
- The other outer sciences linked directly to Architecture and built environment; like Economy, Technology, Demography, Politics and law, Sociology, Culture, Environment and ecology, and Philosophy; their importance's increased in the City planning and the Regional Planning; this is because of the nature of these science increase the activities performance, entrepreneur, and the materialistic advantages of the projects.

- The relation between Architecture and built environment sciences; illustrated in diagram(1)

  ▪ The spatial Planning and Landscape Architecture linked more to the general vision of Architecture but Landscape Planning is more linked to the Urban Design and the Spatial Planning is much linked to Urban Planning.
  ▪ Economy, Technology, Demography, Politics and law, Sociology, Culture, Environment &Ecology , Philosophy; are linked to all the relevant sciences but their importance different in each one.

5. Recommendations:

By taking architecture as starting step in studying cities (which is done in the Sudanese universities educational programs), the recommendations of this paper are;

- The development of city knowledge in Architecture and Built environment, can be in two disciplines.
  1. Urban Planning: and from it we can involve regional planning and urban geography.
  2. Urban Design: which is linked more with the pure architectural practice and theories.
- The Landscape architecture and the spatial planning consist partially each of Architecture, Urban design, Urban planning, and Regional planning within their subjects and knowledge.
- The system of the physical spatial scale (buildings, clusters, districts, city, regions) is very relevant to our used system in recent educational programs and adequate to our local experiences and capabilities; so I recommended it to be the main system used in teaching Built environment.
- This system can also help in governing city and conducting city
- development processes as decisions making, programs, and machines.
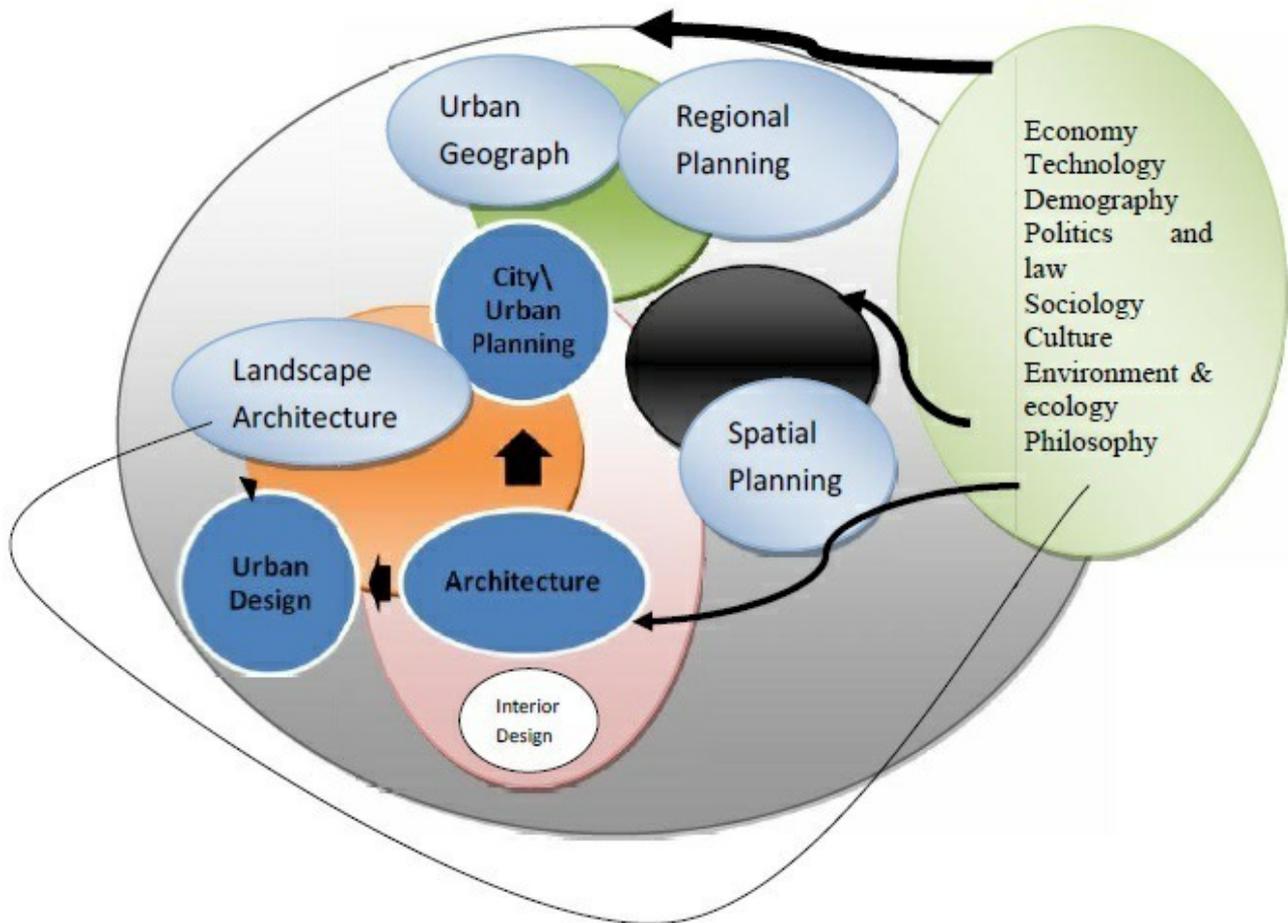
Diagram(1): The relation between Architecture and built environment sciences. Source: Taha\Alia\ 2014

Notes:

The writer doesn't take Physical planning as one unit, but, it is distributed to spatial planning, urban planning, and regional planning. The other specialize concerns of physical planning as environmental, economical, social, transportation, infrastructure,..and so on, are ignored because there are less extensively comprehensive.

Acknowledgement:

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