



## Tribe environment, built environment and urban privacy Bani Walid city as a case study

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**Abstract:** This research examines the relationship between cultural and social interactions, as cultural societies have unique characteristics that are reflected in their cultural expressions and their impact on the built environment, and vice versa, using Space Syntax measures (Intelligibility and synergy), which are links between some of the most important measures of Space Syntax theory. The city of Bani Walid was chosen as a case study because it has lower values of Intelligibility and synergy than traditional pedestrian cities.

Analyses of the Space Syntax theory were used, as it was noted that there is a strong relationship between local integration and Global integration, as well as between Connectivity and Global integration, which in turn reflects knowledge of the degree of privacy and the impact of people's cultural background on planning their cities.

The relationships between roads, spaces and their syntactic values are very important issues to understand the impact of social and cultural interactions on the spaces and streets of the city.

**Keywords:** Cultural interactions, Space Syntax measures, Bani Walid, Global integration, Syntactic values.

### Introduction

Researchers have shown an increasing interest in understanding how the individuals' behavior influences built environment and how it can be proactively utilized to impact specific behavior, such as improving socio-cultural interaction or reducing felonies. This relevant research spans different fields, including design, geography, urban planning, and sociology, resulting in a diverse set of concepts, hypotheses, and techniques for understanding how the built environment can improve socio-cultural interaction[1].

A similar definition is also given by the Webster's Online Dictionary; privacy is the quality of being secluded from the presence or view of others or the condition of being concealed or hidden [2].

The idea of distinguishing spaces according to their degree of privacy is very common for architecture. It is traced back to the beginning of the seventeenth century [3].

For today's architectural practice, this distinction, seems self-evident and almost an essential precondition when approaching a design problem. Nevertheless, in most cases dealing with it ends up in separating social spaces from private spaces. This separation of social and private is pinpointed by

Nathan Witte in his thesis on privacy “Within the architecture discourse, privacy is seen as something to be provided or withheld” [4].

The concept of privacy is complex and multifaceted, and its definition varies depending on the context and interpretation. Scholars from various fields, including law, philosophy, sociology, environmental psychology, anthropology, biology, zoology, and architecture, have studied privacy extensively. In recent years, the field of computer science has also focused on privacy as a critical issue [5].

Privacy serves as a vital mechanism for controlling overcrowding in the animal kingdom, and it is necessary for developing and maintaining healthy relationships within society. According to Irwin Altman and Westin, one of the major functions of privacy is to serve the individual's self-identity by creating personal boundaries. In other words, privacy allows individuals to establish a sense of control over their personal space and information, which is essential for maintaining autonomy and individuality [6].

In today's digital age, privacy has become a critical concern due to the widespread use of technology and the internet. With the constant collection and dissemination of personal data, individuals are at risk of losing control over their privacy. Therefore, it is essential to implement measures to protect personal information and ensure individuals have the right to control their data. This can be achieved through the development of privacy policies and regulations, as well as the use of encryption and other security measures to safeguard personal data [7].

Overall, privacy is a vital aspect of personal identity and autonomy, and it is essential to protect it in all contexts, whether in the physical or digital world [8].

Today, cities around the world are experiencing different ways of living, and the development and progression of urban areas, along with various social changes, have greatly increased the complexity of urban design [9].

As sociocultural practices of any society depend on the willingness of the people to continue practicing them and the impact of resettlement programs on such activities, there is a need for urban open spaces at the local urban level to reduce social stresses by increasing direct interactions and building linguistic connections [10].

The most essential parts of a social framework are activity spaces, as these are spaces where social interaction occurs. Therefore, it is important for towns and cities to create specific places where social effectiveness can happen, and individuals can freely choose. Previous studies have shown that any communicative activity can influence the quality of life and personal satisfaction. Additionally, there is a critical relationship between open spaces and physical well-being, including good health and public interaction [11].

Furthermore, the experience of space in the urban environment is directly influenced by what is seen and how it is viewed, and the urban image in human reason, thus human behavior, can be oriented through all furniture components to be made in urban places. The environment is a condition that employs social support, and culture matters since people have distinctive qualities and diverse inclinations concerning administration and leadership, that are identified with their cultural foundation [12].

Lastly, individuals need relationships to develop a sense of self, and relationships are important for their ability to help individuals build up a feeling of self. The relational self is the part of an individual's self-concept that comprises the emotions and beliefs that one has regarding oneself that develops based on interactions with others.(Lubis and Primasari, 2012). Urban image in human reason in this manner the human practices and behaviors can be oriented through all furniture

components to be made in urban places (Lang, 1994). Environment is the condition that employs social support (Laurens, 2012). One approach emphasizes the importance of culture in cross-cultural interactions. In this viewpoint, culture matters since people have distinctive qualities and diverse inclinations concerning administration and leadership that are identified with their cultural foundation (Hofstede, 2001). Studies have demonstrated that national culture impacts an individual's mentality, conduct and convictions (Harrison and Huntington, 2000; Hofstede, 2001; Kirkman et al., 2006). (Also develop a sense of self of individuals need more Relationships; relationships are important for their ability to help individuals build up a feeling of self. The relational self is the part of an individual's self-idea that comprises of the emotions and convictions that one has in regards to oneself that creates in light of collaborations with others [13].

### **Cultural of communities**

Cultural communities have unique characteristics that are reflected in their cultural expressions, including language, folklore, traditional food and clothing, and customs related to celebration and gathering. In order to prevent the loss of their cultural identity due to increasing global cultural openness, many communities make efforts to preserve their traditional heritage and cultural traits [14].

### **The Urban Formation**

Urban formations are a favorite theme of many regions, and different types of urban formations can be found in different areas. In addition to the nature of the relationship between the Blocks and spaces in the city, attention is also given to the urban relationships between the blocks themselves and the shapes, sizes, and proportions of the blocks and spaces. In The region of ban Walid and other tribe traditional Arab cities, these characteristics can be seen in the relationship between blocks and spaces, such as closed streets ( like tree ) and alleys, reflecting the social concepts and relationships of the residents and their environmental methods in response to climatic conditions and their social composition [15].

### **The social field**

is the realm of interaction that occurs between individuals and their social environment. It differs from the urban field in that urban formation are the result of interactions that occur within the social field [16].

According to Bourdieu, the social field encompasses markets, social relations, individuals, institutions, capital, and domination. This social field can be divided into subfields such as education, economy, cultural production, religion, and bureaucracy. Bourdieu compares society to a universe, where each group, like the galaxies of the universe, has a social status related to its surrounding circumstances [17].

Thus, Bourdieu views society as a social space, and the relative position of a group within that space determines its identity. It determines the identity of the dominant layer in the community, and thus the characteristics of this layer have a significant impact on the shape and distribution of urbanization [18].

### **The cultural model**

The cultural model is represented that it is the collection of perceptions, expressions, values, and ideas that a society creates in its interaction with reality. Thus, the model relates to society as a whole in a particular historical period. The transition from one historical period to another indicates that the content of this model, including its perceptions, expressions, values, and ideas, may be changing. For us, the cultural model is a collection of representations, values, and ideas produced by the social field

that work to frame symbolic and dialogical actions in this field. These actions are shaped according to the specificity of this cultural content that attributes identity to the individual or is considered simultaneously with the social field itself.

### **The culture**

The definition of culture is a way of life shared by the members of a society or community and acquired through membership and participation in the community's way of life. Culture can be learned through interaction with others and includes two aspects: the material aspect, such as invention and production, and the moral aspect, such as beliefs, attitudes, values, and rules of behavior. These are examples of the moral aspects of culture [19].

Culture is a complex whole consisting of customs, traditions, beliefs, values, practices, and all the inventions and innovations that exist for human existence, among others [20].

### **Bani Walid City**

Bani Walid is a city situated in the Tripoli region, specifically in the sub-region of Misurata, which is positioned east of the AL-Khums sub-region along the coastal area. The primary settlement in this sub-region is the city of Misurata, while Bani Walid is regarded as the second city of the Baladiya, located to the south of Misurata. Figure (1) The city is predominantly inhabited by the Warfalla tribe, which was a mother tribe that has since split into sub-tribes. These sub-tribes have divided the lands amongst themselves, with each tribe being aware of its own borders, except for the central area of the city, known as 'Alsuqe' or the market area. This region serves as a hub for the local population to fulfill their shopping needs, trade their goods, animals, and other products.

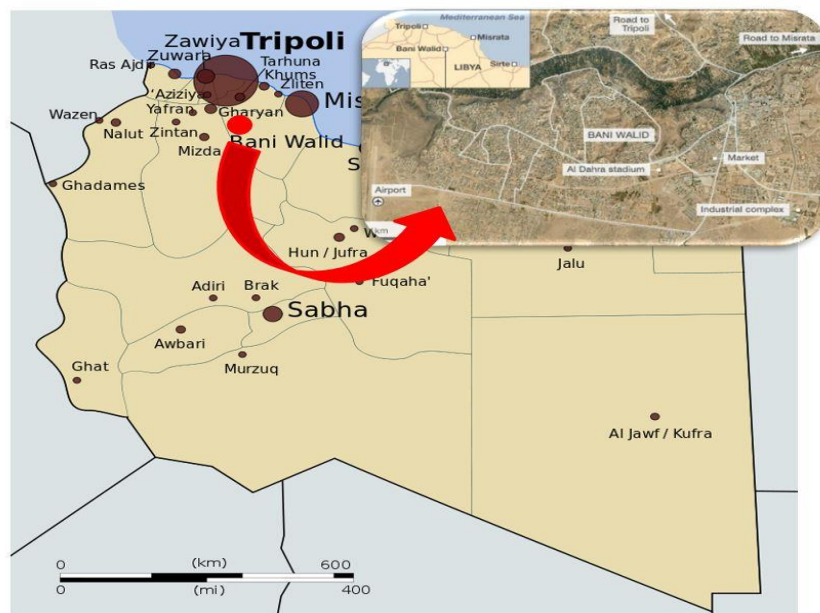


Figure (1) location of Bani Walid city

Bani Walid is located on both banks of the Wadi Alblad, which experiences seasonal rainfall that alters the usually dry valley. The dams in the city, which are all outdated, are believed to have been constructed during the third century CE, possibly as part of the Roman Empire's frontier zone development in the area [21].

Agricultural products were transported to Leptis Magna, a significant port that developed into a major city in Roman Africa. Apart from the dams and tombs near Msletten, no other ancient remains are

identifiable in the modern-day Bani Walid. However, the city does host a small museum that displays many antiquated models from neighboring archaeological sites. These models often feature agricultural motifs, such as a man climbing a palm tree or a peasant plowing with a dromedary, which were commonly found throughout the Roman Empire's frontier zone. Another prevalent theme in the museum's exhibits is fish, which can also be seen in Qasr Banat. In the semi-desert landscape, water, life, and eternity are symbolic themes. The museum's green area showcases two ancient olive presses from Bir Tarsin that date back to the third or fourth century. Other ancient artifacts in the museum originate from Leptis Magna, Oea (modern-day Tripoli), and Ghirza [22].

In the past, Bani Walid was a desert region with scarce water, and its inhabitants relied on livestock such as camels, sheep, and goats for their livelihoods. They constructed their homes using stones found on the banks of the valleys, including Almardom, Tininai, and Chmikh. The city center, or market, was sparsely populated, with only a few residents who did not own the land they farmed or the cattle they raised. These residents built their homes along the banks of the valley, which provided a source of food for the city due to the fertility of its soil.

Today, the people of Bani Walid continue to build their homes in the same locations alongside the old buildings. The city has grown and developed, with improved infrastructure and services, but it still maintains a connection to its past and traditions. The residents still rely on livestock and agriculture, with the valley remaining an important source of food and water. Despite the changes, Bani Walid remains a unique and fascinating place, rich in history and culture.

### **Bani Walid Urban morphology**

The urban morphology of Bani Walid is characterized by scattered settlements along the banks of a valley, with separate villages forming a discontinuous pattern on either side of the zigzagging valley terrain. The steep terrain has resulted in the main roads, usually one per village, following the contours of the valley and culminating in a cul-de-sac within the village itself. Each village, representing a tribe, is shaped like a tree, figure (2) , with the main road serving as the trunk and branching out into smaller roads that support urban control and privacy[22].



Figure (2) Top view of the main part of Bani Walid



Satellite images of the city reveal a lack of a specific pattern of buildings and spaces, with random buildings occupying the land. This absence of a clear pattern may contradict established theories about building and patterns of urban areas due to the random growth of the city. figure (3) The city's growth was not governed by specific controls, whether natural or human, resulting in a fabric characterized by gathering and overlapping in most of its parts [22].



Figure (3) the built environment of the city

### **Space syntax**

Space syntax is widely recognized as a valid and authentic theoretical and methodological analyzer for studying how space affects human development by measuring spatial configuration (Hillier & Hanson, 1984). It has also become a computer language for describing the spatial pattern of cities. From the perspective of human activities, urban space can be divided into two categories: closed space and free space. Obstructed spaces consist of spatial obstacles, such as buildings, within which people cannot move freely.

Open space, on the other hand, is a part of urban space in which people can move freely. The spaces analyzed by Space Syntax focus on the connections and syntax of spaces; it measures patterns, connections, and arrangements of spaces that cannot be measured with simple Euclidean geometry [23].

Space syntax focuses on the topological relationships of space, including interconnectivity and accessibility, but not on physical distance. Space syntax analysis was carried out as part of the analysis of human perception in Bani Walid City. The analysis of the built environment is at the heart of this research. The results will help us measure the intelligibility and synergy of parts and spaces of the city, among other measures. In addition, it helps us explain why people perceive places differently, and why some places are meaningful while others are easily forgotten (see figure and table). The aim is to describe the syntactic configuration of the city of BaniWalid, analyzing how each space in the spatial structure is related, connected each other to show how urban patterns support urban privacy. This study explores the relationship between sociocultural interactions and the built environment using measures of space syntax, such as correlation, connectivity, global integration, intelligibility, and synergy between local and global spaces. The city of BANI WALID was chosen as a case study for its low integration and synergistic value (high privacy).

The results show a strong correlation between local and global integration and between connectivity and global integration. Due to these linkages, a certain type of planning hinders understanding (privacy) and synergy thereby hindering the development of good relations between city dwellers and visitors, increasing the privacy of urban planning.

Understanding the relationship between routes, spaces, and their syntactic values is critical to determining how urban spaces and streets affect sociocultural interactions.

Space syntax is generally considered an important hypothesis and method of analysis in examining how space affects human development by measuring spatial configurations (Hillier et al., 1984). In spatial configuration studies, the basic methodology is to divide space according to scale and human visual capabilities. From this perspective, space is divided into extensive and small-scale spaces (Montello, 1993; Egenhofer et al., 1995). The extent of these small-scale spaces in a city is beyond human visual capabilities and cannot be seen from a single point. Some small-scale spaces, for example, a room, are larger than the human body, but one would still be able to comprehend the whole [24]

These measures are used to analyze the urban form of a city. Connectivity refers to how well different parts of a city are connected by an efficient transportation network. Global integration measures the extent to which all streets of the city is integrated with the wider region or the city through transportation hubs. Local integration measures how well different parts of the city are connected to each other, including pedestrian routes. The intelligibility indicator measures how easy it is for people to navigate and understand the layout of the city, including the arrangement of streets and landmarks.

The synergy indicator measures the extent to which the city's urban form fosters social interaction and community building.

These measures can be used to assess the quality of urban form and to compare the urban form of different cities. By comparing the measures of Bani Walid with the averages of other local and global cities around the world table (1), it is possible to gain insights into the strengths and weaknesses of its axial lines and the overall urban form.

Table ( 1 ) comparing the measurements of Bani Walid with the averages of other cities

Column1	connectivity	local integration	global integration	intelligibility	synergy
	C	R3	Rn	Rn/C	Rn/R3
U.S Cities	5.835	2.956	1.61	0.224	0.559
Euro Cities	4.609	2.254	0.918	0.137	0.266
English Cities	3.713	2.148	0.72	0.124	0.232
Arabic Cities	2.975	1.619	0.65	0.231	0.16
Libyan Cities	3.53	3.53	0.904	0.192	0.369
Old Benghazi	4.63	2.5	1.15	0.219	0.4041
Tripoli	4.46	2.528	0.992	0.1565	0.3204
Old tripoli	3.82	2.229	0.948	0.1976	0.4456
Elkhums	3.745	1.842	1.293	0.3286	0.7128
Bengazi	3.06	1.809	0.898	0.2134	0.3563
Ghat	2.77	1.691	0.9317	0.2626	0.4938
Ghadames	2.55	1.518	0.5037	0.0987	0.191
Bani Walid	2.667	1.303	0.348	0.0624	0.2747

**Discussion and Results of Syntactic analysis of Bani Walid built environment:**

**CONNECTIVITY VALUE C**

The city of Bani Walid has a connectivity value of 2.667, which is lower than the average connectivity value of the traditional pedestrian city of Ghadames. This is because the tribal settlements in Bani Walid tend to prioritize privacy, resulting in a street network that resembles a tree with many cul-de-sacs within each tribe. As a result, the limited number of paths available for observers to choose from restricts the diversity of travel options within the city. Figure (4)

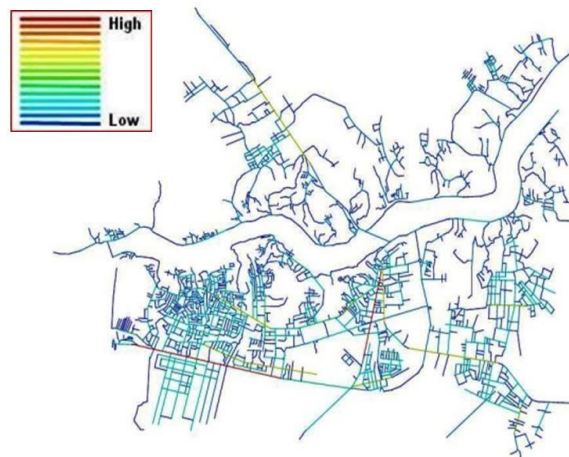


figure (4) Bani Walid city- connectivity value-c

**Global integration Rn**

The level of global integration in Bani Walid has significantly decreased and is below the average for traditional cities, with a value of 0.348. This suggests that the urban plan of Bani Walid does not promote easy movement between different parts of the city, and instead, limits mobility within the



confines of each neighborhood or tribe. The linear streets that serve as traffic axes connecting different parts of the city are the most integrated spaces in Bani Walid. figure (5)

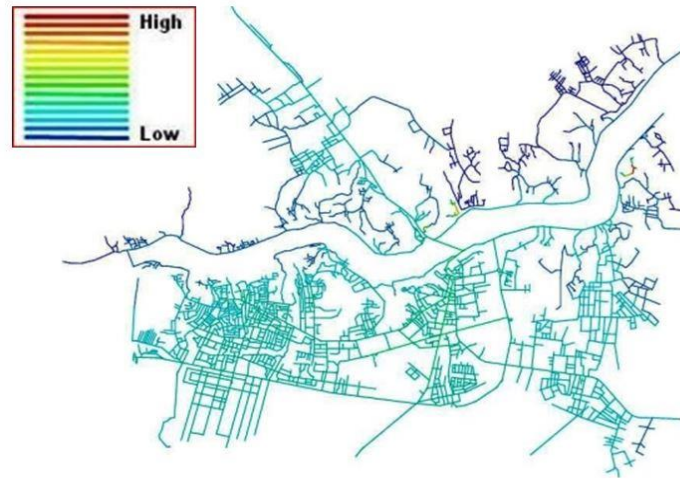


Figure (5) Bani Walid city- global integration-Rn

### local integration-R3

This indicator has been calculated on the basis 3 steps depth, Bani Walid city was (1.842) Slightly higher than the average of Arabic cities, this value means that the city has straight and connected streets. For this indicator was very low, less than average of compact traditional towns, this mean that the city has short, curved streets. Figure (6)

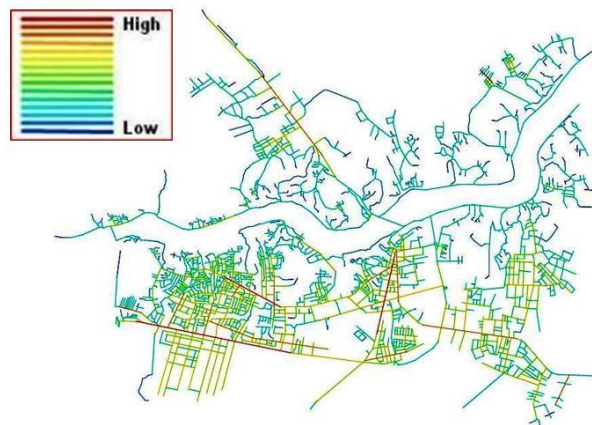


Figure (6) Bani Walid city- local integration-R3

### Intelligibility Rn vs. C

In terms of intelligibility, Bani Walid has a very weak score of 0.0624 compared to other cities, including traditional ones. This indicator is derived from a combination of the global integration and connectivity values. Intelligibility refers to an observer's ability to comprehend the entire city by viewing only a few select areas. However, in the case of Bani Walid, the spatial structure requires viewing a large portion of the city to understand it as a whole. figure (7)

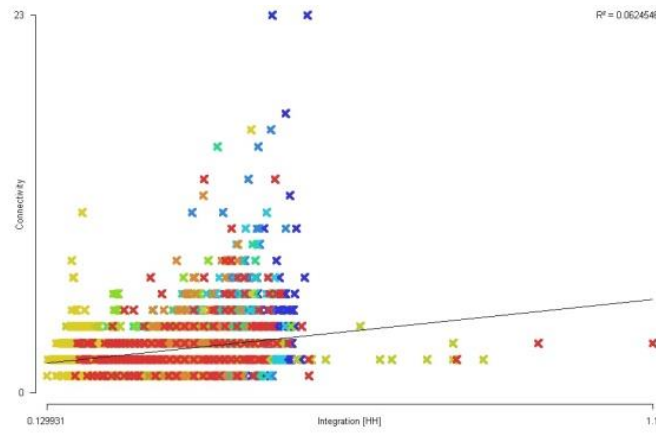


Figure (7) Bani Walid city Intelligibility Rn vs. C

**SYNERGY R3 vs. Rn**

This indicator is a reflection of the relationship between global integration and local integration values. It aims to determine whether the spatial structures of a city support or prevent the flow of movement between local inhabitants and global visitors. Additionally, it assesses if the city's spatial structures promote integration and cultural exchange among users of urban spaces.

Surprisingly, Bani Walid has a lower score of 0.2247, which suggests that its spatial structures hinder the relationship between the local and global levels. This is mainly due to the tribal settlements' emphasis on privacy as a way of life, which limits the interaction between the local and global communities. figure (8)

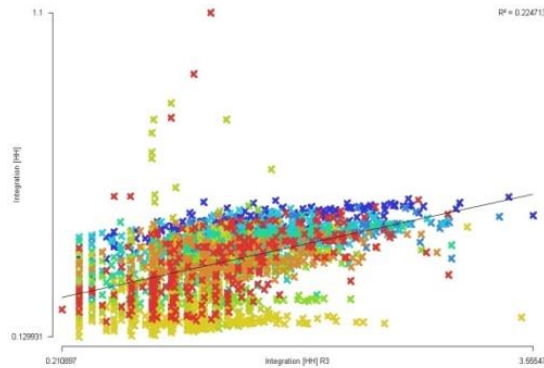


Figure (8) Bani Walid city Synergy R3 vs. Rn

**The relationships within the tribes in Bani Walid city**

The traditional social structure of Bani Walid is reflected in its spatial layout, as seen in the axial analysis. However, this analysis falls short in reflecting the local centers of the tribes, and thus segment analysis has been conducted to observe the tribal structure in local measures.

The results of the segment analysis indicate that the angular integration increases as the distance decreases, as shown in Figures 46a, b, c, and d. This is due to the close relationships within the tribes, which are confined to narrow areas. The angular analysis also highlights the emergence of new integration cores as the diameter of the analysis decreases, confirming the tribes' enclosure in a limited area with excessive privacy for each tribe.

The majority of integration cores appeared within a radius of 250 meters, which is much less than the limits of walking distance on foot. This confirms the existence of strong relationships within very

narrow limits. Therefore, the traditional social structure of Bani Walid deeply ingrained in its spatial layout, with close relationships confined to limited areas. figure (9)

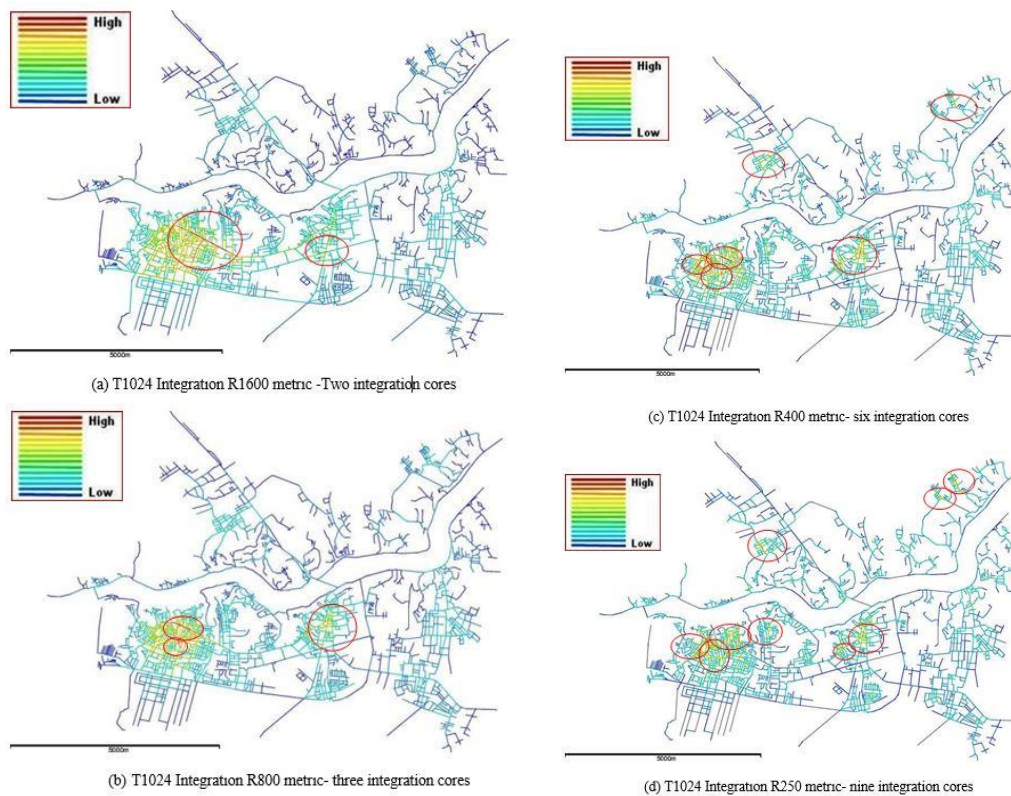


Figure (9) angular integration of Bani Walid city

## CONCLUSION:

The physical environment plays a significant role in shaping the perceived quality of a city. The study suggests that urban design must take into account the culturally and socially specific needs of the people who inhabit the city, as well as their mentality. It is important to consider both the hidden features and visual aspects of urban design and architecture, including the combination of structures and areas with other city elements like streets, buildings, and uncovered spaces.

The design of urban interfaces and spatial relations is crucial to creating good urban environments. The requirements for interaction shape any designed environment, which should aim to support various social and cultural possibilities.

In the case of Bani Walid, the city's spatial structure is not easily intelligible and is less legible in terms of visuals and structures. The city contains short, curved axes, compact spaces, and various changes in directions, resulting in a large axial size that is difficult to understand and requires a lot of effort to comprehend. Additionally, it is challenging to move from one part of the city to another due to the high level of privacy within the tribes, which acts as a significant obstacle to linking residents and visitors.

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