

## Theoretical Review Effect and Solution of Urban Sprawl

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### ABSTRACT

Urban sprawl began after the industrial revolution in the late 17<sup>th</sup> century, which led to the growth of industry in the city center. In that era, transportation means such as railways and electric trams, which made the population move away from downtown to urban periphery or suburbs. The dominance of theoretical studies of urban sprawl tends to give the dominance of adverse effects rather than their good effects. Various theories about the concept to solve the negative effects have been done, but less successful. Other similar studies of urban sprawl also not found the concept of overcoming the negative effects of urban sprawl, except for only one Stan study (2013) on spatial hybrid concepts. This leads to a new research loophole or "Gap of Knowledge" through the concept of spatial hybrid that offers a concept development solution through a natural process so that the negative impact of urban sprawl will be improved.

**KEY WORD:** Spatial Hybrid, Sub Urbs, Urban periphery, Urban sprawl.

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### I INTRODUCTION

Growth or spread from downtown to suburbs dominates the world's advanced cities as urban sprawl. A thorough study of the literature on urban sprawl debates, initially outlining that urban sprawl existed in the world's developed cities during the twentieth century, through a combination of social and technological factors. An interesting phenomenon in that century is the existence of urban decentralization. It was marked by the displacement of some residents from the downtown area polluted by the industrialization cities to the suburbs. The displacement in the suburbs was triggered by trains and trams. This condition culminated when the car present from the 1920s especially after the Second World War. The relationship between urban decentralization and living standards, when it finally deteriorated due to traffic congestion and the more homogeneous suburbs (Arbury, 2005).



**Figure 1.**

The spatially extensive and automobile dependent urban sprawl. Photo of Calgary, Canada (Arbury, 2005)

Nelson et. (1995: 1) has summarized the various definitions of urban sprawl in the literature on concepts as unplanned, uncontrolled development, single land use, uncoordinated development by not providing mixed land uses associated with surrounding land use. This condition resulted in the emergence of land with low density, ribbon or strip development, scattered development, leapfrog and isolation. Urban sprawl is viewed more negatively in the planning literature, because it is often the often causes of excessive land use in open space, congestion due to increased commuting, and socio-economic segregation due to exclusive housing markets (Carruthers and Ulfarsson, 2002: 315). Sprawl growth is thought to contribute to significant fiscal costs for infrastructure (Burchell and Mukherji, 2003), and public health issues (Sturm and Cohen, 2004; Kelly-Schwartz et al., 2004; Nozzi, 2003). The conditions in the industrialization era cause many problems such as housing needs, air pollution, water pollution and workers' health (Relph 1987: 49). Urban sprawl as the main form of urban growth that has been criticized negatively on environmental, social and economic impacts (Newman and Kenworthy, 1989; Ewing, 1997; Hillman, 1996; de Roo and Miller; 2000; Burton; 2000; Jenks et al. , 1996; Breheny, 1992; Elkin et al., 1991).

The compact city model is a tourban sprawl, and through a new focus on the importance of urban design, known as 'new urbanism'. The compact city hypothesis was introduced as an alternative to resolve urban sprawl problems that focused on limiting urban periphery expansion, and instead seeking intensified development. This is done by increasing the existing urban density and rebuilding of underutilized or abandoned land. The compact city is designed to make the use of existing land resources and infrastructure more efficient, and to reduce the use of cars (Arbury, 2005). Compact city is a model that focuses on urban intensification, creates limits for urban growth, encourages the development of mixed-use and puts the focus on the role of public transport and quality urban design. During the early 1990's, the compact city policy was enthusiastically implemented by many planning authorities, particularly in Britain and throughout Europe. At this stage there is a critical analysis of the question of whether a compact city model can fulfill its promises of sustainability. The debate over compact city has dominated the urban planning literature since the mid-1990's with many conclusions, contradictions and difficulties (Williams, 1999: 175).

In addition to the model of Compact city - New Urbanism, many other discoveries about the concept of overcoming urban sprawl have been done, but still lacking good results (Setioko, 2010). Some of the solutions to solve urban sprawl problems include: New Town (Golany, 1976), New Town (Danisworo, 1984), Transit Village (Gilham, 2002), Edges Cities (Caltorpe and Fulton, 2001), Postmodern City (Dear, 2000), City Boundaries and Compact Cities (Jenks and Burgess, 2000). In addition to negative impacts, urban sprawl also has a positive aspect that contributes to its proliferation. Burchell and Mukherji (2003) explain that urban sprawl has enabled people to gain access to cheap dwellings, away from the city center full of crime and poverty, while citizens still have freedom of movement with a large road system. Comparison between the good effects and adverse effects of urban sprawl, then the adverse effect more dominate urban areas due to urban sprawl.

Two groups of discussion above essentially point to two different phenomena (urban sprawl-compact city) that result in a less successful solution. Other conditions of sub-urban positions are adjusted from time to time in order to remain exist and survive against the existing problems. This is reinforced by the opinion of Rosi (1984) that the future city is the place where something fragment will once be damaged and subsequently reshape "recomposed", and supported the assertion that the growth of the urban sprawl will formally called the "spatial hybrid" (Gordon and Richardson, 1998). From these two positions there is a gap or "Gap of Knowledge" of research that opens up the possibility that there is a good solution to both urban sprawl-compact phenomena through the context of "Spatial Hybrid". Considering the study of the "spatial hybrid" context as a solution to the devastating impacts of urban sprawl is minimal and the location is only in Bucharest city of Romania, there is an opportunity to deepen and develop the concept of "spatial hybrid".

## **II LITERATURE REVIEW**

### **Comparison Of The Definition Of Urban Sprawl**

The first reference to the term of urban sprawl was made by Earle Draper, as part of a city planning conference in the southeastern United States in 1937 (Wassmer 2002; Nechyba and Walsh 2004). Since then the use of the term urban sprawl has spread to various domains, but no common definition agreement has been obtained. This leads to situations where urban sprawl is an ambiguous term that may be used in several domains, such as urbanism, geography, economics or recently also remote sensing and data science. There are many definitions of urban sprawl from writers and researchers on urban sprawl. Researchers define definitions based on their respective contexts. Although there are various definitions of urban sprawl, but have a similar understanding. From the following definitions, nine authors were selected, such as, Burchell, et.al. (1998), Gordon and Richardson (2000), Galster, et.al. (2001), Barnes, et.al. (2002), Chin (2002), Ewing, et.al. (2002), Habibi and Asadi (2011), Bhatta (2012), Slaev and Nikivorof (2013).

Burchell et.al, (1998) explains that urban sprawl is a spreading and development that has non-central characteristics of metropolitan and non-metropolitan cities. There are five categories of sprawl impacts: Public

and private capital and operating costs, Transportation and travel costs, Conservation of terrestrial / natural habitats, Quality of life, Social problems. According to Gordon and Richardson (2000) the phenomenon of Urban sprawl is related to all sorts of problems, including increased income inequality, job insecurity, downtown downturn, rising housing costs, long journeys, environmental problems, species extinction, farmland loss, isolation, height, muscle tension, intolerance, psychological disorientation, and killing and chaos. Urban sprawl according to critics tends to leave an undefined term or simply equate it with "unplanned" growth. Galster, et.al. (2001) understand that sprawl as a metaphor rich in ambiguity. Urban sprawl has been criticized for aesthetics, efficiency, justice and the environment and defends choices, equations and economic foundations. Barnes, et.al. (2002) explains the definition of urban sprawl is a pattern of land conversion where urban land growth rates significantly outstrip the rate of population growth over a period of time, with low density dominance. Urban sprawl pose considerable economic, emotional, aesthetic, and physical costs to residents in the country's main metropolitan area.

According to Chin (2002) basically there is no agreement in urban sprawl definition, so there is little agreement on the characteristics, causes and effects of urban sprawl. The general agreement that urban sprawl takes place in the suburbs. Urban sprawl is positioned against the ideal compact city with features of high density, centralized development and mixed spatial functions. The characterization of urban sprawl occurred early in the 1950's and 1960's, urban sprawl could be defined as a pattern of development with poor accessibility between land use due to unconcentrated development and homogeneous land use. Ewing, et.al. (2002) explains that urban sprawl as the process of spreading development across the landscape far outstrips population growth. The landscape creates four dimensions: a widespread population at a low development level; separate homes, shops, and workplaces; the road network is characterized by large blocks and poor access; and the lack of well-defined and growing centers of activity such as downtown and town center. In urban sprawls tend to push further distances, have more cars, breathe more polluted air, greater traffic risk and lack of transit media.

The writings of Habibi and Asadi (2011) define that urban sprawl as a physical plan of low density growth in large urban areas, based on market requirements, especially around agricultural zones. Its construction is patchy, scattered about, with a tendency of discontinuity. These areas are leapfrog, leaving agricultural pockets, small area use, transport dominance by private vehicles, lack of central planning or land use control, commercial expansion, good fiscal disparity between regions, segregation of land use types in various zones, and dependence on trickle down or screening to provide a home for low-income households. According to Bhatta (2012) although the exact definition of urban sprawl is debated, the general consensus is that urban sprawl is characterized by unplanned and uneven growth patterns driven by many processes and leads to inefficient use of resources. The immediate implication of urban sprawl is the change of land use. Urban sprawl has a negative connotation, although not all urban growth is sprawl. For example the type of urban growth in infill is generally regarded as a solution for urban sprawl. Slaev and Nikivorof (2013) describe that urban sprawl is an unplanned condition of urban development in the form of physical expansion processes and inefficient conditions including urban to rural.

Various definitions show that urban sprawl is part of urban growth outward from downtown. Urban sprawl is an inefficient city growth and tends to have adverse effects. Burchell, et.al. (1998), Galster, et.al. (2001) and Chin (2002) have a similar understanding of urban sprawl from the absence of population concentration. Barnes, et.al. (2002) and Ewing, et.al. (2002) understands that urban sprawl occurs due to urban growth beyond population growth limits. Galster, et.al. (2001) and Habibi and Asadi (2011) have a common understanding of urban sprawl from the density side. The comparative conclusions of several existing urban sprawl definitions, the definitions by Bhatta (2012) and Slaev and Nikivorof (2013) have similarities in understanding urban sprawl. The similarity of the two writers lies in the unplanned and inefficient growth process.

### **Characteristics Of Urban Sprawl**

The characteristics of urban sprawl according to Burchell, et.al. (1998) are spelled out among other low housing densities, unlimited new outward expansion, leapfrog development, spatial separation of different land uses, decentralized landholdings, automobile transport advantages, fragmentation of government land use authorities, disparities in local government fiscal capacity. Context in Burchell, et al. (1998) have an influence on infrastructure, housing, transportation, energy, the environment, and the quality of living costs due to urban sprawl. The characteristics of urban sprawl explained to Gordon and Richardson (2000) related to various problems, including inequality, unpaidness, downtown downturn, rising housing costs, long journeys, environmental problems, species extinction, agricultural loss, feel isolated, high blood pressure, muscle tension, intolerance, psychological disorientation, and damage and chaos.

Galster, et.al. (2001) provides a clearest picture of urban sprawl characteristics in eight dimensions: Density: is a widely used sprawl indicator in which different types of densities can be explained. Continuity: is

the extent to which unused land is built in an unbroken manner. Concentration: describes a disproportionate level of development rather than its uniform distribution. Clustering: urban sprawl is often grouped what it means to occupy only a fraction of the land area of each. Centrality: loss of centrality is one of the most serious problems of urban sprawl. Nuclearity: describes the extent to which urban areas characterized by a mononuclear development pattern. Mixed used: is seen as a process that separates different types of land use. Proximity: is the level of land use that is close to each other.

The characteristics of sprawl by Barnes, et.al. (2002) such as fragmented habitats and land-use patterns/patchiness, poor accessibility between adjacent land uses/segregated land uses, lack of functional open spaces, brownfields in abandoned urban areas, automobile dependence and weak public transportation systems, rural to urban land conversion rates that exceed population growth rates, higher rates of energy consumption than more compact settlement forms, increased tax burdens and costs in delivering public services over time. Explains that Ewing, et.al. (2002) in urban sprawl tends to push further distances, have more cars, breathe more polluted air, greater traffic risk and lack of transit media. Among the characteristics of urban sprawl found in higher driving rates and vehicle ownership, increased levels of ozone pollution, the magnitude of fatal accidents, pedestrian depression and alternative transportation use, there were no significant differences in congestion handling. Context of Ewing, et.al. (2002) contains an attempt to determine, measure and evaluate metropolitan urban sprawl and its impact.



**Figure 2.**

Low density residential and nonresidential intrusions into rural and undeveloped areas (Barnes,et.al,2002).



**Figure 3.**

Pedestrian depression and alternative transportation use (Ewing, 2002).

Slaev and Nikivorof (2013) describe the characteristics of urban sprawl as low density in new development areas, patchy and scattered forms, with discontinuity tendencies; lack of differences in land use and urban activity, lack of good definition, growth of centers, public service and trade centers; less affordable by public transport services. The context in the writings of Slaev and Nikivorof (2013) lies in one of the main characteristics of sprawl is that it is considered primary-market. More precisely, the main factor is the lack of a balance between market trends and planning policies that allow market participants to determine the use of plots in suburban locations. This condition slightly ignores references to the public interest and sustainability issues. This study examines the particular residential traditions and preferences that exist in the Sofia population to identify the specific characteristics and aspects of the existing model in Bulgaria.

Various characteristics show that the impact of urban sprawl tends to negatively affect the suburbs. There are similarities in sprawl characteristics regarding density / density between Burchell et al. (1998) with Galster, et.al. (2001). Another similarity between Burchell, et.al. (1998) with Barnes, et.al. (2002) in terms of sprawl characteristics of leapfrog . Next only Burchell, et.al. (1998) which reveals spatial segregation. Burchell, et.al. (1998) with Galster, et.al. (2001) found similar features in terms of decentralization. Dependency with automobiles is a feature of sprawl delivered by Burchell, et.al. (1998), Barnes, et.al. (2002), Ewing, et.al. (2002) and Slaev and Nikivorof (2013). The comparative conclusions of some of the urban sprawl characteristics are on average physical traits. While the social features are in Burchell's et.al.(1998) writings on social segregation.

### **Aspect Triggers Urban Sprawl Emergence**

Aspects of urban sprawl formation (Chin, 2002) include population growth is a strong aspect of increasing demand for housing, residential preferences are rural housing options driven by higher income levels, increased personal mobility and improvements in transport, market role as housing demand is linked to population growth. Brueckner (2000), Audirac, et.al. (1990) analyzed urban Sprawls caused by consumer demand and other market-related factors. Ewing, et.al. (2002), measuring urban sprawl using aspects: building density, road network accessibility, city center strengthening, and proximity to mixed use, housing needs, workplaces and facilities. Gilham (2002) explains the aspects of urban sprawl forming are land tenure and land



use, transportation patterns, telecommunication technology, standards and regulation. Hasse John and Richard (2003) measure sprawl on housing units using five sprawl aspects i.e building density, leapfrog, segregated land use, highway strip development, and distance to the city center (node inaccessibility). Various aspects that exist are the cause or trigger about the existence of urban sprawl. The comparative conclusions of some of the urban sprawl aspects that exist, then the complete and appropriate aspects of the research topic are those written by Chin (2002).



**Figure 4.**

Residential preferences and increased personal mobility as one aspect of the emergence of urban sprawl (Chin, 2002).

#### **Urban Periphery And Sub Urban As A Location Of Urban Sprawl**

According to Adell (1999) the peri-urban area is an area adjacent to urban growth, and is characterized by a strong influence with urban activity. The relationship between urban and suburban areas is a functional one, characterized by the flow of commuters from city to suburban areas and vice versa (Caruso, 2005). This phenomenon corresponds to the urban sprawl phenomenon. Suburban areas are usually not densely defined and are defined as areas of transition between urban use and rural use. It can also be defined as rural cities. The boundaries are not rigid, spreading and are often considered transitional zones. The context of Adell's (1999) paper is based on the evolutionary development of Rural-Urban theory from 1950 to 1980. Urban deserts are seen to have different characteristics between developed countries (North) and developing countries (South) (Woltjer, 2014). In developing countries, in the absence of mature planning regulations, the region is under increasing pressure in its development, and usually changes from previous rural activities to mixed with urban activities in land use. Mixed development in suburban areas can create degradation problems, especially the environment, lack of infrastructure, and social conflict (Nkwae, 2006). The context of Nkwae's (2006) study is to help clarify the understanding of periurban land issues often exacerbated by misconceptions surrounding customs in South Africa. The conclusions of the comparison of some definitions, contexts and aspects of urban periphery that exist have their own features. Adell (1999) is more development context and physical aspect, Nkwae (2006) is more to cultural context of environment and social aspect. The qualities of both are essentially complementary in order to understand an urban periphery. The definition, context and aspect of these periphery areas tend to be non-permanent because urban periphery will always change and tend to be in an unclear position, so that the suburbs as a result of urban sprawl should always experience improvement to the adverse effects of urban sprawl.

An identical understanding of urban periphery is known as sub-urban. According to Gober and Sherwin (2017) the process of sub-urban formation is called suburbanization. Suburbanization is the movement of upper and middle class people from the core area and the surrounding area. The process began in the mid-nineteenth century but became a mass phenomenon in the late 20th century. After World War II suburbanization resulted in massive changes in human distribution. This becomes important about the human consequences of using the land. The phenomenon of suburbanization is in line with the urban sprawl phenomenon. Between 1950 and 2000 there were 50% of the population in the United States residing in sub-urban areas. The occurrence of sub-urban because of four factors, such as (Gober and Sherwin, 2017): transportation of mass production of housing, choice of land / location, pollution and congestion. Factors influencing the development of sub-urban according to Whyne Hammond (1985) include: improvement of urban transportation services with the availability of public transport that allows people to reside away from the workplace, the movement of the population from the city center to the periphery and the entry of new residents who come from rural, the emergence of housing residents with the support of bank loans by the government, the human nature of the drive to obtain a comfort. The problem that arises in sub-urban areas is the change of agriculture sector which causes environmental problems. Another problem is transportation, because residential people who live in pingiran but work in the

city center, causing problems of congestion and air pollution. The conclusions of the two authors such as, the definition of sub-urban / suburbanisation of the equation of movement from downtown to the periphery. While in terms of aspects there are similarities about transportation, housing and population needs, the difference between them are found in the choice of location and comfort. Sub-urban is an urban sprawl location, while its aspects have in common with urban sprawl aspects.

### III DISCUSSIONS

#### The Concept Of Handling The Negative Effects Of Urban Sprawl

Gillham (2002) describes everything related to new urbanism as an effort to deal with the adverse effects of urban sprawl. New urbanism is often referred to as Traditional Neighborhood Development (TND), neotraditional planning, Transit-Oriented-District (TOD) or Compact Development concept. This movement emerged in the 1980's as an alternative to the conventional development concepts existing in suburban United States settlements. This movement believes that the concept of neotraditional planning can solve the problems of suburban housing that has been in existence as a result of conventional approach. This neotraditional concept refers to the characteristics of the old city in the United States, such as small plots, short or zero GSBs, houses with front porches, large public spaces, multi-functional land use, narrow and interconnected roads. Such characters are found in cities, such as Charleston, South Carolina, Alexandria, Virginia and Marblehead, Massachusetts. This movement is also being developed in Europe, *The Urban Villages Forum* in the UK and *The European Sustainable Cities Campaign* in mainland Europe. In general, a New Urbanism movement adheres to several planning principles for urban development, such as: restoration of existing urban centers within a single metropolitan area, re-establishment of irregular urban suburbs and multi-functional land use, conservation of the natural environment, preservation of environmental heritage artificial, land use and occupants must vary, pedestrians including public vehicles and cars should be designed within a community environment, the city should be shaped by a clear physical form and an easily accessible public space, the urban area should be shaped by architectural designs and landscapes that appreciate local history, climate, ecology, and development practices.

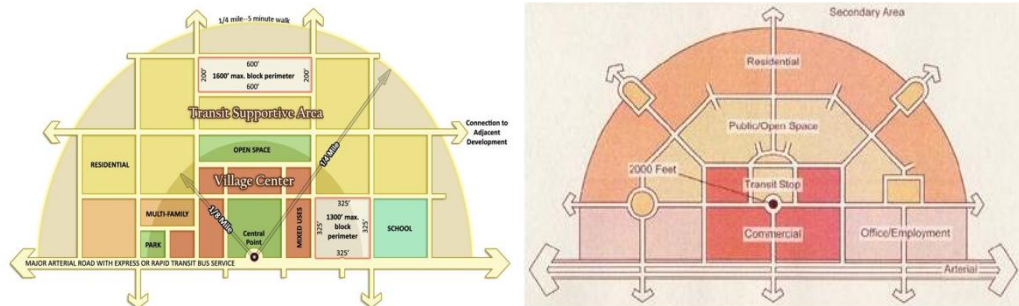


Figure 5.

Traditional Neighborhood Development (TND) and Transit-Oriented-District (TOD), (Gillham,2002).

#### Criticism Of New Urbanism And Compact City

The concept of new urbanism to solve real estate problems in the suburbs has received much praise from various parties, such as architects, planologists, environmentalists, and government bureaucrats. This movement also received criticism such as, concerned with the things that appear physically and forget the things that are social, political and economic. In reality many real estate with the TND concept is difficult to create multi-functional land use for the establishment of a community. In addition, some projects that implement the TND concept can't achieve the original goal of being an inclusive housing but rather being exclusive housing only for the upper middle class, such as some real estate in Austin. Consumers are not concerned with what is offered by the new urbanist but a conventional concept that is oriented to motor vehicles (Charles C.Tu and M.J.eppli, 1999). Consumers, especially the middle and upper class, are still interested in large plots, low density and single land functions. Another obstacle is consumer awareness about security issues with the concept of the alley behind the house plot. Traffic congestion is not reduced. In addition, one of the cases of the delayed TND project due to community opposition was the Lakeside housing on the outskirts of Dallas, Texas planned by Andres Duany and Elizabeth Plater-Zyberk in 2000. In this case, communities around the Lakeside project objected to housing plans with high density 5-6 floor apartment. In their assumptions the apartment will lead to crime, violence, gangs, and ultimately lower property selling value in the surrounding area.

In addition to new urbanism there is also another solution concept to deal with the adverse impact of urban sprawl is the concept of compact city. Scoffham and Vale (1996) ask questions about what the compact city is; whether the building should be closer, whether the number of people living in the building should

increase; whether the density in question is the density of dwelling or activity density, and what is the role of mixed land use in dense city debates. Burton (2002) has identified that to measure compact city involves three processes: first, identifying and defining various aspects of compact city; second, develop indicators to measure each of these aspects; and third, count and review the indicator size for different cities. In the mid-1990's there was widespread belief about compact city as a model of city sustainability. This approach is so dominant that it is inconceivable that anyone would oppose the flow of this opinion (Smyth, 1996). Further research begins to show that predicted benefits do not occur as they should, and compact cities are in a dangerous state, not reflecting the reality of economic demands, environmental sustainability and social expectations (Thomas and Cousins 1996: 56). The increasing uncertainty of the compact city concept, developed critics focus on the truth of the compact city hypothesis (whether the compact city actually provides the necessary environmental, social and economic benefits); feasibility (whether the compact city can answer the market and can be implemented properly); and acceptability (whether the compact city will lead to the political reactions of local inhabitants) (Breheny, 1997).

The others concept of handling the adverse impact of urban sprawl, according to Setioko (2009) research, besides new urbanism, other urban sprawl handling movements such as in the 70s, emerged the concept of New Town development or "new city" in England. The philosophy of "new city" is based on three main principles: decentralization of densely populated areas, independent living, balanced commonsity between working and living. The five elements of the term "new city" are: the drajad of independence, a balanced community, the diversity of land use patterns, self-governing, urban areas (Golany 1976: 26). For third world countries (Danisworo, 1984) offers a new concept of "new city". The concept, when viewed on a regional scale, serves as a policy instrument to tackle urbanization and on an urban scale is a catalyst for the gradual integration of the sociocultural culture of rural communities, from traditional rural communities to modern society. This concept offers a new alternative to traditional rural communities with no need to immigrate to a big city if they wish to become a modern society. Another concept is the Transit Village, distinctive features: blend with nature, always close to the train line, not close to the bus / car line. Transit village has a building density of 12-60 units per acre house (TOD 7-15 units of house / acre). The average occupancy is a quarter of a mile from the station. The neighborhood center is surrounded by civic and public space and the distance can be reached by walking in five minutes (Gillham, 2002).

Edges Cties is a concept popularized by Garreau in 1991, defined as the development of a periphery area equipped with a major activity center and a regional retail activity center. There was a shift that was once an industrial city-based economy, transformed into a municipal economy-based service deployment. Thus the suburbs change from rural areas to a shopping area and offices. Garreau spawns five factors in the edges of cities: an office area of more than 465,000 m<sup>2</sup>, a minimum retail trade area of 56,000 m<sup>2</sup>, provides more workplaces than residential, residents should feel a place, edges cities unlike the 30-year ago (Calthorpe and Fulton, 2001: 2). Similar approaches but different names continue to emerge as: postmodern city (Dear, 2000), city boundaries and compact cities (Jenks and Burgess, 2000). Various concepts of urban growth and urban development strategies that are new to the above are still obstacles and unable to stop the growth of urban sprawl in the suburbs (Setioko, 2009). The conclusion of the study of urban sprawl handling solutions that have been done, useful to know how far this concept can solve the problem. In fact some of these concepts are not very effective at solving problems due to the impact of urban sprawl. The basic character of some of these concepts tends to collude in a compact or permanent fashion without the natural process of problem phenomena in the periphery. The other side of the periphery is basically a fairly dynamic area and always undergoes a gradual natural change in order to compose permanently or perfectly.

### **Review Of Similar Research**

Similar research that has been done about urban sprawl, such as: Timoticin Kwanda (2001), the aspect is landuse-density-accessibility, about the concept of new urbanism in real estate. Maman Hilman (2004), the aspect is the development-patch, about the influence of the expansion of city Speed and the pattern of housing growth. Eric J. Strauss, Bogdana Neamțu (2006), the aspect is regulation, on local government management to address unplanned conditions. Polidoro, Maurício; De Lollo, José Augusto; Fernandes Barros, Mirian Vizintim, (2011), the aspect is accessibility-public-environmental services, about uneven population density, impact on low green areas, all using descriptive methods. Mussie G. Tewolde, And Pedro Cabral (2011), the aspect is development, using the Object Based Image Analysis (OBIA), Land Use Cover Change (LUCC) and The Lands Change Model (LCM) methods of urbanization that eliminate agricultural land.

Stéphane Dupuy, Eric Barbe And Maud Balestrat (2012), the aspect is the development-patch, with the Object Based Image Analysis (OBIA) method, the conversion of urban sprawl land with satellite imagery. Houshmand Ebrahimpour-Masoumi (2012), the aspect is accessibility-development, using descriptive and qualitative methods, about urban sprawl differences in Western societies and Iran. Angelica I. Stan (2013), its aspect is purity-composite-composite-coexistence-transfusion-interconnect-hiterogeneity, with the



Morphological-cal Spatial Pattern method, on the typology of various peripheral regions, including hybrid properties. Angela Hof and Macià Blázquez-Salom (2013), its aspects are socio-political-social, using explorative and empirical methods, about urban driven urban sprawl development and vice versa. Aleksandar D. Slaev, Ivan Nikiforov (2013), its aspect is landuse-regulation-population growth, using descriptive methods, about the characteristics and specific aspects of urban sprawl. Reni Mujiandari (2014), the aspect is landuse-density-accessibility-economic, with descriptive method, about sprawl in Semarang City from physical and non-physical side.

Shiqiang Du, Peijun Shi, And Anton Van Rompaey (2014), its aspects are regulatory-growth, with the Quantitative method, Landsat Imagery, about the conflict between urban expansion and the protection of agricultural land. Qiong Gao, Mei Yu (2014), the aspect is the environment, by the method of Spatiotemporal Fragmentation, on Reviewing the development of urban sprawl that impacts on forest fragmentation. Chen Zeng, Sanwei He and Jiaying Cui (2014), are aspects of compromise-composite-interconnect-density-density-accessibility, with Multilevel and Multidimensional methods, about the characteristics and measurements of urban sprawl in a multi-dimensional way. T.Subramani, V. Vishnumanoj (2014), the aspect is landuse, using the Remote Sensing Data method, on five class land uses with remote sensing satellites.

Mohammad Mehdi Nasiri Khalili, Hamid Abyab, Mohsen Ebrahimi, Simin Tavallaee, Mohammad Soleymanid And Mousa Kamanroudid (2015), the aspect is landuse, with descriptive-quantitative methods, Helder and Shannon Entropy Model, about the physical restriction of cities from linear and horizontal developments. Muhammad Tauhidur Rahman (2015), the aspect is landuse-population growth, with the method of Multi Temporal Landsat and Remote Sensing Data, about the improvement of built-up area with remote sensing method. Slavka Zeković, Miodrag Vujošević, Jean-Claude Bolay, Marija Cvetinović, Jelena Živanović Miljković, Tamara Maričić (2015), the aspect is public-service regulations, with contextual methods, Comprehensive and Integrated Analysis, on land policy evaluation and land use efficiency.

Similar research that has been done about urban periphery are: Delik Hudalah, Haryo Winarso and Johan Woltjer (2007), the aspect is economic-institute-spatial-environment-sustainability, with descriptive-qualitative method, about Persepectip of peri urban area related to center metropolitan. Pengjun Zhao, Bin Lu, Johan Woltjer (2008), the aspect is a political-institution, with a descriptive method, about the development of the suburbs through the actualization of local development. Olli Lehtonen & Markku Tykkylainen (2011), the aspect is economic, with descriptive-quantitative method, about the gap between regions in the standard of living. Johan Woltjer (2014), the aspect is the economic-social-institutional-spatial-environment, with the method Descriptive-Qualitative, about the study of three urban characteristics: space, life and peri-urban changes.

Kim Economides (2012), the aspect is the law, with the descriptive method, about the peripheral society who experience different legal treatment. Paul Amoateng, Patrick B. Cobbinah and Kwasi Owusu-Adade (2013), the aspect is physical, with the relevance review method and related literature, about the pattern of physical development influenced by local factors. Medina Ayesha Serlin and Ema Umilia (2013), the aspects are physical, with descriptive and positivistic methods, about factors that influence people to choose to live in peri-urban. Delik Hudalah, Haryo Winarso, Johan Woltjer (2014), the aspect is political, with descriptive, qualitative methods, about the political dynamics in mediating the interaction of the capital movement of the social reorganization of the social class. Adam Grydehøj (2014), the aspect is physical, with descriptive-qualitative method, about the process of centering and rejuvenating the city on an island. Tunde Bogardi (2015), the aspect is population growth, with descriptive-qualitative method, about the change of population in the periphery.

Johannes Frische (2015), the aspect is economic, with descriptive-qualitative method, about the practice of informal economy in maintaining life in the periphery. Haryo Winarso, Delik Hudalah, Tommy Firman (2015), the aspect is the social-economy, with descriptive-qualitative methods, about the Urbans in the transformation of socio-economic structure, the village becomes urban. Luminița Iosif (2016), the aspect is the economic-socio-cultural-institution, with the method of interviewing the survey, about the relationship of the population with the living space. Antonín Vaishar, Jana Zapletalová, Eva Nováková (2016), the aspect is sustainability, with quantitative-statistical methods, on the aspect of small town sustainability through internet technology. Catherine Sutherland, Vicky Sim, Sibongile Buthelezi, Duduzile Khumalo (2016), the aspect is socio-political, with qualitative-constructivism methods, about social construction of environmental management of suburban populations.

Similar research has been done on hybrids such as Anne Jacquin, Lucie Misakova, Michel Gay (2008), the aspect is land cover, with the method of Multi-Remote Sensing Data Hybrid, about mapping urban land cover that is spatial heterogeneity and spectrum from the surface urban by hybrid approach. Zhuoqing Li, Jianchu Xu, Rajendra L. Shilpakar, Xing Ma (2014), the aspect is wetland cover, by the Hybrid Extracting Spatial Pattern method of hybrid methods extracting wetland spatial patterns that combine multispectral classifications.



Various existing research topics related to urban sprawl can be summarized, yielding more about sprawl spreading mapping models, factors of urban sprawl and consequent urban sprawl, except for Stan (2013) showing the character of the sprawl urban sphere called "Spatial Hybrid", study location in Bucharest City Romania. While some studies of existing urban periphery can be concluded, that the study of urban periphery more on the findings of existing conditions, the aspects that exist in urban periphery and urban periphery development. Another study of "spatial hybrid" is found in only one group: Hybrid Land Mapping, containing writings from Jacquin, Anne, et.al (2008) and Li, Zhuoqing (2014). Both authors produce only research on land mapping models using the "hybrid" method. Both studies did not generate aspects of "Spatial Hybrid" on the periphery of urban sprawl. Other posts on hybrids put forward by Forman and Gordon (1998), Gausa (2003) and Couch et.al (2007) which only convey the definition of "hybrid". Actually very much research on "hybrid", but not found aspects of "Spatial Hybrid" as has been stated by Stan (2013). The number of studies on "hybrids" because the term "hybrid" is a common word commonly used in agricultural science discussions, so much of the literature on "hybrid" is more about agriculture.

The overall conclusion of three major research topics concerning urban sprawl, urban periphery and "spatial hybrid" suggests that the overall study focuses more on the findings of the existing conditions, their aspects and consequences. This finding is more likely to be dominant to sprawl impacts that are of a poor nature. Research gap that can be done as a "gap of knowledge" is in addition to the gap of research opportunities from two phenomenon of urban sprawl and compact city which both still produce bad impact, but also there is no research that deeply discussed that condition of urban periphery as a result of sprawl, is likely to be an improved and acceptable area of society in that environment, such as Stan (2013) on aspects of "spatial hybrid" located in Romania's Bucharest City.

### **Spatial Hybrid As A Solution To The Negative Effects Of Urban Sprawl**

Sub-urban proved to be adjusted from time to time in order to remain exist and survive against the existing problems. This is in accordance with the opinion of Rosi (1984), that the city of the future is a place where some fragment will once be broken and subsequently reshape "recomposed". This is reinforced by the assertion that the growth of urban sprawl will formally called "spatial hybrid" (Gordon and Richardson, 1998). The definition of hybrid landscape according to Gausa (2003) is a multilayer object, working with systems, processes, dynamic mechanisms, linking information, joining, and possessing. The development of urban sprawl according to Gordon and Richardson (1998) will eventually formalize and be called spatial hybridization, in which it contains creativity and innovation. The area requires the rediscovery of its permanent conditions at all the risk of failure. According to Gausa (2003), hybrid space has aspects such as: developing from purity pattern, compromise and composite feature. Gausa (2003) speaks of the architecture written in the information society and is influenced by the context of new technologies, new economies, environmental concerns and individual interests. Meanwhile, according to Stan (2013) spatial hybrid is a feature space and place that has aspects such as coexistence (co-existence), transfusion (transfusion), interconnection (ambiguity) and hiterogenitas (heterogeneity). Stan (2013) speaks urban sprawl in the context of development.

Spatial hybrid according to the Stan (2013) has a concept, among others: the creative process of the actual world, tactical strategy based on the combination of a tactical strategy based on a combinatorial logic (open), flexible (flexible), multi-view (multi-face) and informal support (informal support). The concept of spatial hybrid was applied to a case study in the Romanian Town of Bucherest by discovering the intermediate spaces of two different regional functions of industry and settlements. The space between the two distinct functions is a green line. The conclusion of the definition, the characteristics and the concept of this hybrid space serves to rebuild the understanding of the adverse effects of urban sprawl that eventually gets better. The principle of the concept of a hybrid space is to find a natural middle ground for the two distinct groups to produce good conditions. Basically, the concept of the hybrid space proposed by Forman and Gordon (1986), Gausa (2003) and Stan (2013), indicated that the solution by gradually processing in the suburban area due to urban sprawl will produce something better. The concept of hybrid space is at once answering the concept of compact city as a less successful solution in the new era of urbanism (given). Stan (2013) in the spatial hybrid discussion is applied in Romania's Romanian City, so there is an opportunity to develop this concept and be tested on different case settings.

## **IV CONCLUSION**

The conclusion of the discussion above is the context of the urban sprawl phenomenon is the dispersion of the population from downtown to the sub-urban areas resulting in a more dominant negative impact than the good impact. The other side of the effort to solve the adverse impact has been many concepts, one of which is compact city, but still not successful. Both groups of discussion above essentially point to two different phenomena (urban sprawl-compact city) that ultimately result in a solution that has not been successful. On the other hand the position of urban periphery or sub-urban was adjusted from time to time in order to remain exist

and survive against the existing problems. This is in accordance with the opinion of Rosi (1984), that the city of the future is a place where something fragment will once be broken and subsequently reshape "recomposed". This is reinforced by the assertion that the growing urban sprawl will formally called the "spatial hybrid" (Gordon and Richardson, 1998). In this position there is a gap or "Gap of Knowledge" of research that opens up the possibility that there is a good solution to the two urban sprawl-compact city phenomena through the context of "spatial hybrid". From a number of studies of similar research on urban sprawl, it shows that research on the context of "spatial hybrid" as a solution to the adverse effects of urban sprawl has only one paper of Stan (2013), where the study is located in the Romanian city of Bucharest, so the concept of "spatial hybrid" has a chance to be deepened as the development of theory to overcome the negative impact of urban sprawl.

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