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URBAN STRUCTURE OF THE SAN FRANCISCO BAY AREA IN THE CONTEXT OF FORMATION OF A NEW TYPE OF URBAN FABRIC

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ABSTRACT

The purpose of this article is to outline the changes and phenomena within the urban planning structure of the San Francisco bay area, which can be interpreted as impulses associated with the emergence of new post-industrial urban forms. Formation of the theory of impulse modeling of an urban organism requires not only theoretical generalizations and study of the material relating to the peculiarities of the post-industrial (informational) era, but also the search for practical phenomena associated with the rapid development of certain urban areas. At the same time, such development should not be confused with the concept of polycentrism, which was formed during the period of modernism.

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Introduction. One of the main features of the post-industrial era in urban development was the phenomenon of hyper-urbanism and the emergence of over-large settlements, which dwell tens of millions of inhabitants, sometimes exceeding the population of small countries. For example, the population of Istanbul, according to the National Institute of Statistics of Turkey, amounted to 14 657 434 people in 2016 [1, 2], while at the time, according to the report of the United Nations Department of Economic and Social Development for 2015, the population of neighboring Greece amounted to 10 955 000 people [2, 3]. The population of Shanghai, which in 2016 exceeded the rate of 24 000 000 inhabitants and was larger than Australia's population in the same year, which according to the Australian Bureau of Statistics accounted for 23,401,892 people [3, 4]. The population of five Scandinavian countries (including Denmark and Iceland) and the Baltic states totals 33,000,000, which is less than the population of Tokyo with the suburbs (about 37 800 000) [4, 5].

Such parameters of hyper-urbanization suggest that a post-industrial city can no longer be considered in those categories that were applied to previous historical epochs. Unlike the times of industrialization, when the city was first and foremost a place for a better supply of wages and labor, often more accessible than in the rural territories at the turn of the twenty-first century, it has been providing the best offer in services and leisure. Large-scale master plans in a developed urban system have become more flexible and fragmented. The development of certain parts of modern urban fabric today may have a rather self-sufficient character and form on the basis of situational factors, which are hereinafter referred to as impulse ones.

In particular, this is noticeable in the urban structures that formed in geographical conditions, which contributed to the spontaneous formation of multi-territorial impulses. Thus, in these cases, we can speak of the independence of such an urban system from the modernist methodology of polycentrism. An important factor is the high 'fluidity' of urban fabric and its high density. The example of such urban formation is the metropolitan area of San Francisco, which, as of 2016, amounted to more than 4,600,000 inhabitants.

The nature of the relief and geography of the abovementioned area has not contributed to the formation of the concentric structure of urban fabric. The historic core of the city, located at the extreme point of the San Francisco Peninsula, is 50 kilometers away in the depths of the Pacific Ocean and the San Francisco estuary. From the north and east to it, at a distance of 2.5 and 5 kilometers, the spurs of the continental massifs are separated by water. Such a specificity of the area contributed to the spontaneous 'dismemberment' of the urban nodes and their dispersion into various fragments of a complex, disassembled relief.

Available Among the main literature sources relating to the concept of post-modern urbanism, we can consider futuristic-popular works by E. Toffler [5,8,6,9], prognostic-sociological analyst M. McLuhan [7,10,8,11,9,12] and the political economy of D. Bell [10,13]. In the context of urban development discourse there also is an illustrative work, a monograph by N. Ellin "Postmodern Urbanism", published in 1999. 'Surfing' along the backbone of traditional concept of the theory of postmodern architecture, the author relocates her perspective on the urban level and promotes a complete re-considering of its external visual content. At the same time, the critique of the rational technological aesthetics of modernism is combined with the support of technological innovations and critical view of the modernist city's society [11, 17]. Alternative to modernist urbanism view can also be attributed to the fundamental work of Christopher Alexander, which was structured within the universal concept of developed by him so called "pattern design" [12,19]. Although Alexander is a well-known critic of modernism and his views on architecture are reminiscent of the metaphysics of Aldo Rossi, the algorithmic content of his "pattern design" may characterize him as a directive-minded theorist of an intellectual-rationalist formation. Alexander's urban planning ideas are formulated in his works of " A New Theory of Urban Design" [13, 20] and "The Nature of Order: An Essay on the Art of Building and the Nature of the Universe". Quite close to this academic level is P. Hull's monograph "The Cities of the Future," a multifaceted review of the development of urbanism from the beginning of the Industrial Revolution in the second half of the nineteenth century. Without revealing categorical evaluative judgments, the author reveals the inner connection of technological innovations in the "machine era" with the ideas of the arrangement of living space in the conditions of the changed economic and social connections of the present [15, 24].

Research results. An advanced analysis of the ontology of the formation of San Francisco's urban system is beyond the scope of this study, although in its process a number of impulse factors can be identified. Such as, for example, the interconnection between the growth of a city structure with the exploration of gold deposits in the north of California in the middle of the nineteenth century, or the establishment of an urban network by the education enthusiasts on the other side of the San Francisco Bay. In the context of considering the hypothesis of a poly-impulse strategy for the development of modern urban fabric, one should focus on the peculiarities of the population settlements of San Francisco Bay Area (San Francisco - Auckland - Hayward), which were formed on the turn of the twenty-first century. (Fig.1).



Fig.1 Examples of buildings in a historical nucleus (Photo by the author. San Francisco, 2016)

Although the metropolitan area of San Francisco is mainly considered to be the historical nucleus on the northern end of the peninsula of the same name, in fact it combines the gravity zone of the city of San Jose, which is located about 70 kilometers to the south. In general, the territory around the San Francisco estuary is covered by a continuous settlement of a total length of about 100 kilometers. Given the great attractiveness of this place for settlement (the presence of a natural harbor, the terminal station of the trans-American railroad, favorable climatic conditions), it has undergone a process of spontaneous urban placement that has demonstrated some signs of impulsivity. Leaving beyond the scope of this work the morphogenesis of the structure of settlement itself, one should pay attention to its actual characteristic features.

In fact, The San Francisco Bay Area is a continuous ellipsoid hyper-urban fabric, composed of separate self-contained centers, whose main feature is the presence of their own unique identifier. In addition to the historical core of the city with fragments of the original style of the ninetieth -early twentieth century and the business district, there are such self-sufficient city nodes as: Auckland, Berkeley, Palo Alto, the so-called Silicon Valley, San Mateo, San Rafael, Hayward, etc.

The main feature of the San Francisco Bay Area is the 'two-fold' perception of the urban area around the estuary. On the one hand, it consists of self-sufficient settlements with administrative and territorial self-government, and on the other hand, they are perceived as components of the micro-oikumene in which the center is of memorial rather than practical value, and the very concept of the actual "center" is blurred or even missing.

To the south of the core of San Francisco, is the residential unit of San Mateo, which has its own closed urban infrastructure - an architecturally expressed municipality, recreational areas, educational centers, etc., and also contains urban fabric developed on the system of man-made landmorphic formations. The latter form a residential area of high comfort, with the length of 6.5 km, and the width of 3.5 km. with a harbour for yachts, roads for cars and access to recreational and sports areas (Forest City, Red Wood Shores). This is a truly unique spot for The San Francisco Bay Area and being a self-sufficient settlement, it is 'the icing on the cake' for the entire micro-oikumene.

As far as 18 kilometers away from San Mateo there is Palo Alto, the so-called statutory city (governed by its own laws that are different from state laws), which is a plateau, generally low-rise building, with plenty of greenery, to which the Stanford University area is adjacent to the width of about 1.7 kilometers. The city is governed by its own laws, different from the state's legislation. It is a hometown to some huge high-tech companies, including Facebook, Google, Intel and dozens of others, whose assets are measured by tens of billions of dollars. The uniqueness of this territory was determined by the technology zone of Stanford University, founded in the 1940s, which became the birthplace for number of scientific and technological innovations at the end of the twentieth century, some of which have a worldwide significance. It is this unique quality integrating Palo Alto in the San Francisco Bay Area, and the evolution of the Stanford Technological Zone can be seen as an impulse factor that played a crucial role in its successful development.

The southernmost point of The San Francisco Bay Area is California's third largest city of San Jose (which is also included in the so-called Silicon Valley), which can be considered a peculiar embodiment of the concept of aeropolis. Urban fabric of the settlement was formed in the second half of the twentieth century, as the expansion of low-rise comfortable building, with developed transport infrastructure, according to the concept of A. Hamman, the city manager. As a result of its implementation, a small settlement of 95,000 inhabitants has grown to 500,000 over several decades. The strategy of infrastructure improvement and concentration of property transactions throughout the Santa Clara Valley in one city of San Jose has led to the city's spin-off growth. [6] Thus, the settlement has become the center of business activity, and the proximity of university and business centers around the San Francisco estuary has attracted relatively wealthy residents to the area. A major airport owned by the city and located in the middle of the entire urban system, at a distance of 3 kilometers from the business center, has become one of the main peculiarities of this city. This enables the settlement to function effectively in the field of global exchange and play the role of one of its centers.

The city of Oakland is located opposite the historical core of San Francisco, on the opposite side of the estuary, the width of which at that point is just over 5 kilometers. As well as with the other abovementioned components of the San Francisco Bay Area, the history of urban development in Auckland is due to the impulse factor, which here has its own nature. The city's rapid settlement took place in 1906, when San Francisco suffered from an earthquake and refugees, in search of safety, rushed to the seemingly safer area nearby. The influx of the population, made it possible to open a number of large productions in the city, which contributed to the following (albeit less intense) waves of settlement. As a result, Auckland at the turn of the 20th-21st centuries was formed as a model of a

globalist-liberal settlement with a stable, self-sufficient energy supply system and effective regulation of the coexistence of various ethnic, racial and religious groups.

North of Auckland, there is the city of Berkeley, which closes the micro-oikumene sphere of the San Francisco Bay Area, whose development is also associated with a unique impulse factor. That was a certain residential planning scheme, which took place in the second half of the nineteenth century, when one of the colleges came up with the idea of offering the land plots for settlement to people with the purpose of filling their budget. However, the specifics of this settlement, when the city gained its 'peculiar' status, came with the laws of 1876 and 1899, which first banned the sale of spirits within the radius of 1.7 km, and then (after the referendum) declared Berkeley an alcohol-free city that had an impact on the categorization of settlers after the earthquake of 1906. The city, quite quickly, has become a world center of scientific and intellectual life of the world level through the development of the 'headquarters' or the core center of The University of California (The University of Berkeley).

Thus, six self-sufficient centers of The San Francisco Bay Area can be distinguished, the emergence of which had a very impulse-based nature, specific to each of them (Fig. 2):

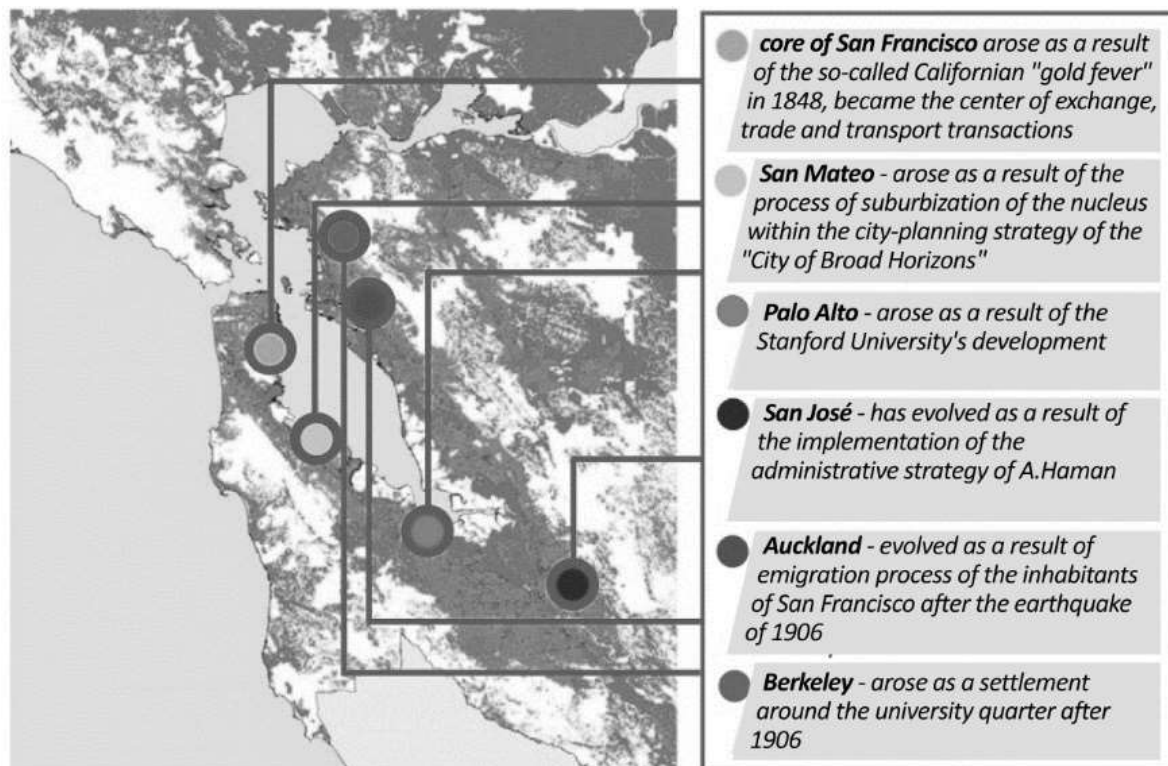


Fig.2 Six Centers of The San Francisco Bay Area, the emergence of which had an impulse-based nature

a) The immediate core of San Francisco arose as a result of the so-called Californian "gold fever" in 1848, when a small bay on the peninsula between the Pacific Ocean and the estuary, became the center of exchange, trade and transport transactions. In the context of the San Francisco Micro-oikumene plays the role of the main visual-semantic identifier;

b) San Mateo - arose as a result of the process of suburbization of the nucleus within the city-planning strategy of the "City of Broad Horizons". The unique identifier of the settlement is the extensive landomorphic area of a residential building of high comfort;

c) Palo Alto - arose as a result of the Stanford University's development of one of the first technology parks in the world. In the context of micro-oikumene, it is a cluster of scientific and technological resources of global significance and the location of a large university campus;

d) San José - has evolved as a result of the implementation of the administrative strategy of A.Haman and covers the territory with the most favorable climatic conditions. In the context of The San Francisco Bay Area it can be referred to as an aeropolis and, as such, functions as a focal point for global exchange;

e) Auckland - evolved as a result of emigration process of the inhabitants of San Francisco after the earthquake of 1906. It can be interpreted as a city, which was founded on the grounds of sustainable diversity (the liberal-globalization concept typical for the turn of the century (XX-XXI));

f) Berkeley - arose as a settlement around the university quarter and partly as a result of the combination of refugee influxes after the earthquake of 1906 with their filtration in accordance with local law on an alcohol-free zone. Within the limits of the micro-oikumene, it plays the role of science-city of global significance.

The above - mentioned typology, as well as the number of impulse foci, is here given as an overview, as an example of poly-impulsiveness within a hyper-urban structure, and can have a more extended causal relationship and quantitative interpretation. In the context of this work, the detection and study of the phenomenology of the hyper-urbanized city, which is carried out in the form of micro-oikumene, remains more important.

An important issue posed by such a look at the strategy of creating a post-industrial living space is the question of the magnitude required for its existence. In other words - it is worth seeking the answer to the question: Is there a direct correlation between the post-industrial nature of the city and its scale, and can similar processes be traced in the modern urban development of medium or small cities?

In this sense, the experience of the San Francisco Bay Area, to a certain extent, can serve as an evidence of a positive answer to such a question. Despite the large extent of the urbanized area, the total population here does not even reach up to five million. This is considerably less than the classical hyper-urbanized settlements such as Shanghai, Gwangju, Tokyo, Karachi, Istanbul, etc., whose population is more than ten or even twenty million inhabitants. The main reason for the large scale of San Francisco's micro-oikumene is the prevalence of low-rise buildings and the super-developed network of automotive communications. Thus, with the general tendency towards the development of dense building and its improvement according to the needs of the post-industrial society, one can assume that the system of micro-oikumene can exist not only in the middle-populated cities, but also in geographically small.

Conclusions.

1. On the example of development of the San Francisco Bay Area, the concept of creation of a poly-impulse structure within the framework of one urban development area has been considered. As a result, a 'two-fold' perception of the San Francisco metropolis has been discovered. It has been established that on the one hand, it consists of self-sufficient settlements, which have administrative-territorial self-management, and on the other hand are perceived as parts of a single settled space. In this connection, the concept of urban micro-oikumene was formed, in which the center is more likely to possess a memorial-toponymic rather than a practical value, and the concept of the actual "center" is blurred or even absent.

2. Six self-contained centers of the San Francisco urban-planning micro-oikumene were identified, the emergence of which was of an impulse nature specific to each of them: a) the core of San Francisco, which arose as a result of the so-called Californian "gold fever" of 1848, when the harbour on the peninsula between the Pacific Ocean and the estuary became the center of exchange, trade and transport transactions. In the context of the San Francisco, the above-mentioned micro-oikumene can be interpreted as the main visual-semantic identifier; b) San Mateo - which arose as a result of the process of suburbization of the nucleus within the city-planning strategy of the "City of Broad Horizons". The unique identifier of the settlement is the extensive lendomorphie area of private development of high comfort; c) Palo Alto - which arose as a result of the Stanford University's first ever technology parks. In the context of the micro-oikumene can be interpreted as a cluster of scientific and technological resources of global significance and the location of a large university campus; d) San José - has evolved as a result of implementation of the administrative strategy of A.Haman, in the area with favorable climatic conditions. In the context of the San Francisco Bay Area, it is interpreted as the aero-polis and thus the center of global exchange; e) Auckland - evolved as a result of emigration of the inhabitants of San Francisco after the earthquake of 1906. Its city model is based on the principles of sustainable diversity (the liberal-globalization concept of the turn of XX-XXI centuries); e) Berkeley - emerged as a settlement around the University Quarter and as a result of the influx of refugees after the earthquake of 1906. In the context of the micro-oikumene can be identified as the science-city of global significance.

3. A number of factors has been identified that indicate the 'blurring' of modernist administrative concepts that arose in the administrative structure of The San Francisco Bay Area under the influence of post-industrial factors and the phenomenon of urban micro-oikumene, in particular: a) autonomy of the suburbs, b) experiments with various types of self-government,

c) experiments with resource initiatives, d) development of various methods of attraction of population, e) development of economic models of the sustenance of the population.

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