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FRACTAL APPROACH IN SOCIAL GOVERNANCE

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ABSTRACT

At a time when the scope of social management in New Uzbekistan is expanding and its importance is increasing in various fields, the concept of a fractal approach to optimizing social management processes in the social sciences is widely studied on the basis of scientific analytical findings.

KEYWORDS

Social state, social management, public administration, optimization, social fractal, multifractal, pseudofractal and prefractal.

INTRODUCTION

Respected President Sh.M. Mirziyoyev stated, “The time demands that we accelerate reforms in harmony with spiritual values to further democratize and modernize the social life of society. The most important condition and foundation for achieving the great goals and objectives we have set for ourselves is, in fact, the trust of our people” [1]. This recognition emphasizes the profound spiritual necessity of social governance for the life of society and the state.

Under the leadership and initiative of the President of Uzbekistan, Shavkat Mirziyoyev, the decree on the “Uzbekistan – 2030” Strategy, adopted on September 11, 2023 (Decree No. PF-158), has marked a new stage of development. This document demonstrates a novel approach in all spheres, increasing the sense of responsibility and involvement for the nation’s future.



In the New Uzbekistan, the scope of social governance is expanding, with its influence increasing across various sectors. In particular, the privatization of sectors that have long been under state monopoly, such as education, healthcare, transport, metallurgy, and energy, is enhancing the scale and impact of social governance. In this process, the issue of applying fractal approaches to ensure state and societal stability remains a pressing concern.

In his Address to the Oliy Majlis and the people of Uzbekistan on December 21, 2022, President Shavkat Mirziyoyev emphasized: “Our goal is to build a New Uzbekistan based on the principle of a ‘social state.’ This must be enshrined in the Constitution. A social state, above all, means creating equal opportunities to realize human potential, providing the necessary conditions for a decent life, and reducing poverty.”

In contemporary society, individuals are integrated into various large or small social organizations, and it is impossible to imagine their lives without these entities. The management of such social organizations is referred to in sociology as “social governance.” An organization operates effectively only when it can independently solve its problems or respond adequately to external influences, which is achievable only through governance. It is social governance that ensures the viability of organizations.

In addition to organizations, traditions, customs, religion, laws, and other social factors also influence human life, making humans entirely “social beings.” These factors must also be considered when organizing effective governance today.

From a legal perspective, governance is the regulation of social activity by the state through laws. The definition of “governance” encompasses various meanings, and many of them, like the above, treat governance as social governance, restricted to systems of a social nature [2].

In English, there is no universal term for “governance.” Different terms are used for specific domains of activity: controlling (direction) for the military, enterprises, or production; rule for governing a country; manage for handling affairs; operate or run for managing equipment; drive for a vehicle; conduct for an orchestra; and govern for leadership. Management refers to governance limited to the domain of a firm. “Social governance” (social administration, public administration) refers to governance of broader social systems, including society itself [3].

The distinctive features of social governance are not determined by the level of development of productive forces and production relations but are also shaped by the culture of society. Indicators of the progressive development of social governance include improving



the social system based on societal (public) interests and creating conditions for the comprehensive development of all members of society. Management is an essential element of human culture, evolving as a complex process of social interaction. Culture is often seen as a defining factor in social life, reflected in the language, behavior, rituals, and myths of a particular group.

At the same time, governance culture incorporates attributes of administrative activity, elements of organizational and business culture, and the characteristics of social policy at the macro level. Consequently, social governance inherently includes the influence of societal culture and the micro-level impact of business culture.

Today, the effective governance of organizations and enterprises (whether state-owned or private) requires developing and implementing social governance mechanisms. Accelerating globalization, the integration of information systems on an international level, and increasing competition significantly alter the perception of social governance, fostering beneficial changes and enhancing adaptation to social transformations in governance systems.

Social governance is associated with a new governance paradigm that emphasizes the human or social dimension of management. It focuses on people, encouraging collective action, ensuring greater

efficiency, and building governance based on honesty and public trust. It forms interpersonal relationships and recognizes each employee's individual contribution to overall results, making ethics the "golden rule" of management in business [4].

In the social governance processes of organizations and enterprises, socio-psychological management methods are widely utilized. This requires a deep study of social phenomena within the organization, accounting for factors affecting employees' morale and mental states. Employees' culture, knowledge, and experience make the socio-psychological issues of governance crucial, especially during pivotal life events [5].

Positive changes and developments at the individual, societal, or state level always begin with organizing the existing situation, ensuring logical sequence and consistency in the progression of events.

Today, fractal theory is being applied in various fields, including physics, mathematics, sociology, psychology, medicine, linguistics, and more. Society, social institutions, languages, and even thoughts are considered to consist of fractals.

In the 1960s and 1970s, Franco-American mathematician Benoit Mandelbrot introduced fractal geometry, providing a mathematical language to describe rainbows, lightning, clouds, and other

intricate, colorful configurations with astonishing and complex structures [6].

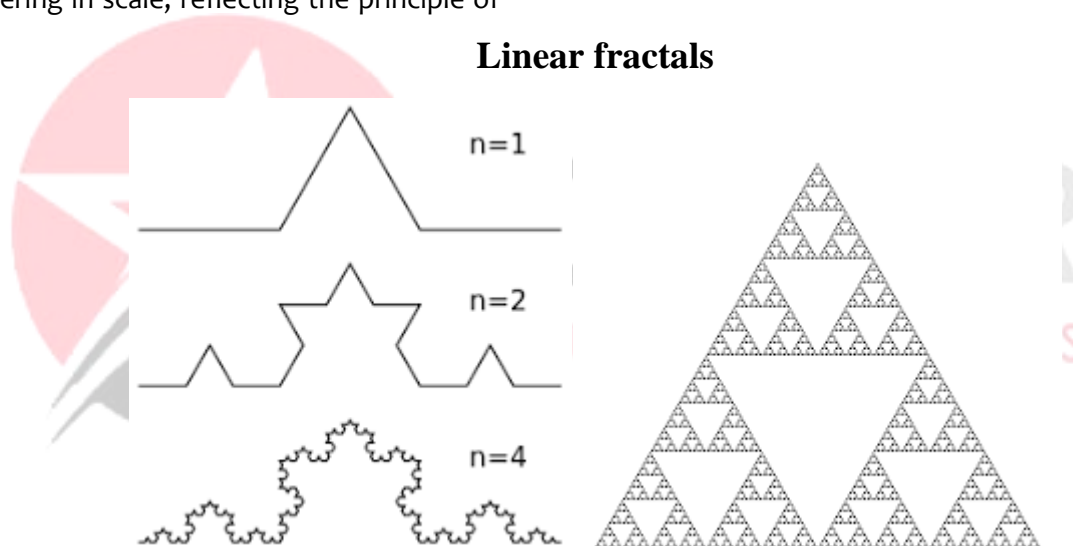
The term “fractal” derives from the Latin “fractus,” meaning “broken” or “fragmented,” and is related to the terms “fraction” or “fractional.” Mathematically, fractals are sets of fractional dimensions [7].

Mandelbrot defined a fractal as “a structure made up of parts that, in some sense, are similar to the whole.” A fractal is a geometric figure where certain parts are repeated, differing in scale, reflecting the principle of

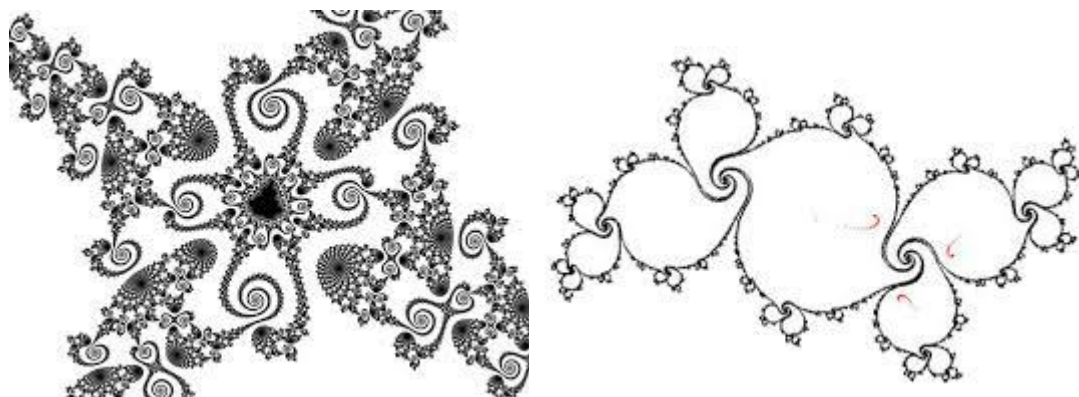
self-similarity. All fractals are self-similar, meaning their elements at all levels resemble each other.

Linear fractals, characterized by self-similarity, are generated by deterministic methods. Nonlinear fractals, on the other hand, reflect instability, asymmetry, and disorder. These fractals, represented by stochastic processes, challenge conventional linear systems and demand innovative approaches to governance in complex, dynamic environments.

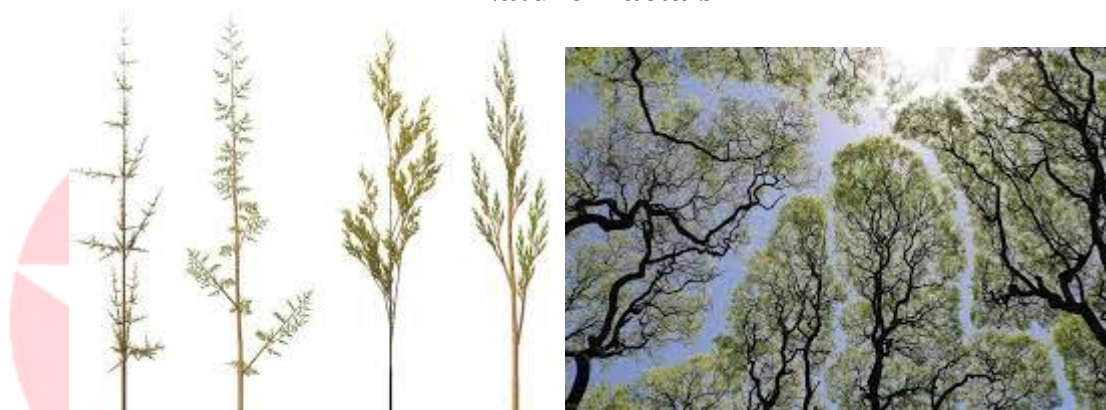
Linear fractals



Non-linear fractals



Nature fractals



Linear and Stochastic (Nonlinear) Types of Fractals in Social Systems

As noted above, fractals can be classified into linear and stochastic (nonlinear) types. In linear fractals, there is complete similarity between the part and the whole, whereas in nonlinear fractals, only partial similarity is observed. In social systems, linear fractals cannot exist. For instance, there can never be complete congruence between the individual and society, or between public interests and ideology. This is why nonlinear fractals are more evident in social

systems. If a social system were based on linear fractals, complete congruence between the people and society could lead to totalitarianism. In such a scenario, society would cease to be an open system and instead become a closed system, revolving around the rigid core of ideology. Therefore, a social system must retain a certain degree of freedom (including elements of chaos) [1].

The concept of fractality is not limited to natural objects; it can also be observed in human activity. For example, L. Flaschen stated, “Any page of a book



reflects its entirety.” Each page must be an integral part of the book and carry elements of its fractal structure, such as rhythm, harmony, and thematic issues, to convey the full conceptual content of the work (E.N. Knyazeva).

Philosopher and cultural scholar M. Epstein emphasized, “Due to the property of self-similarity, the universe is composed of scaled-down versions of itself. The pyramid of life consists of smaller pyramids. This ‘recursive model’ ensures that every part repeats the development of the whole comprehensive model.” [2].

Self-similarity in mathematical algorithms is achieved through recursive procedures, where the spatial form of a fractal repeats itself in every fragment.

Fractal Approaches in Socio-Cultural Studies

Fractal approaches have been applied to study socio-cultural phenomena, introducing the concept of “cultural fractals.” For instance, P. Daunton pointed out, “A cultural fractal reflects the architecture of an entire culture. A city, as such a fractal, demonstrates civilization as a whole while remaining a part of it.”

One of the approaches to studying societal development is the cyclic model, where the spiral (cyclic) nature of development exemplifies fractal patterns.

The expansion of fractal research has also been applied to the study of social phenomena. Humans do not only

refine their technical fractality but also develop their social fractality. Fractality is a distinctive feature of social systems, encompassing society, language, human thought, and similar phenomena. Social fractals also exist; for example, the structure of a family mirrors itself across larger scales. Any society consists of families, with the nation being a larger family and humanity as the largest family.

Cultural fractals are particularly evident in holidays and their representation through specific symbols. Every fragment of a fractal construction represents the whole. In the case of holidays, their essence and meaning are encapsulated in symbols, giving them a fractal structure. However, in fractals, the part and the whole are not always entirely identical. Such fractals are classified as nonlinear multifractals. Consequently, the symbols and signs used in our holidays exhibit a multifractal nature.

The influence of Western fashion—an element of “mass culture”—on national culture also demonstrates a multifractal character, particularly in how it adapts and integrates [3].

CONCLUSION

Fractality as a Principle of Reality

From the ideas discussed, it can be concluded that reality is built on a foundation of fractality (invariance). This signifies the manifestation of the law of fractality



in existence. The fractal approach focuses on modeling this law. The manifestation of fractal patterns is linked to the principle of unity, wherein biological and non-biological objects adhere to a common principle: the part and the whole are structurally similar.

Fractal algorithms can be applied to production, distribution, exchange (markets), consumption, rates, ratios, balances, efficiency, stability, periodicity, and other areas, forming the first-order social multifractal types. When the “Golden Ratio” proportion is applied to these algorithms, second-order social multifractals are created, which can be described as harmonized social multifractals or the multifractals of social harmony.

The beauty of fractals, as an expression of harmonious nature, is also inherent in social fractals. When the levels of social fractals are limited—for example, by regional levels (world → continent → region → country → province → district → city → small town → neighborhood → enterprise)—they transform into social pseudofractals or social prefractals. However, these are less scientifically and practically significant compared to ideal deterministic fractals.

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