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FRACTAL PROPERTY OF ADMINISTRATION

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ABSTRACT

To understand the constant increase in administration, we need a new approach to the administration. For many years, the administration has intensified as a closed science, associated only with economics, law and political science. However, this approach did not bring anything good, because almost nothing in the administration has improved. Therefore, it is necessary to connect the administration with the natural sciences which give the best description of the world around us. Because of this the concept of fractals gives us a good insight primarily why administration tends to increase and why the job in the administration of people outside the church seems meaningless, complicated and full of paperwork.

Keywords: Administration, Fractal, Self-Similarity

1. INTRODUCTION

They can be found in forests, on the frontiers in medical research, in sci-fi movies, in human lungs and it is one of nature's "codes of creation", it is a strange shape that can be found all around our world, that shape is a fractal (Mandelbrot, 1983). In this study I will show that the fractal shape of nature can be applied on administration and that administration has fractal properties. The fractal approach to administration of extreme importance because we are witnessing the rising rates of administration in the world. This rise of administration first proposed a german economist Adolf Wagner which is especially evident in last 50 years (Blažević, 2010). To my knowledge there is no work in the field of administrative science that combines fractals and administration, therefore it is quite challenging to prove and propose a new idea that combine mathematics and administration which are two opposite fields of study. A major contribution to the understanding of fractality of administration gave Parkinson in his well-known law which I will mention here, that will help me to prove that administration is a fractal.

2. WHAT EXACTLY IS A FRACTAL?

Before we get to the main theme of this study, we must familiar ourselves with fractals, what fractal is, how they look like and who is behind all of this fractals?. No matter what they are all around us we were blind to recognize them, until one day when a mathematician named Mandelbrot (1983) opened our eyes. He opened our eyes for the shapes of nature that were always there but most of us did not see until this time. Fractal is a word invented by Mendelbrot to bring together under one heading a large class of objects that have played an historical rule in the development of pure mathematics says F.J. Dyson as a summary (Mandelbrot, 1983). The word fractal is coined from the Latin adjective *fractus*. The corresponding Latin verb *frangere* neabs "to break" to create irregular fragments. Fractals can be defined as geometric shapes like rectangles, triangles and circles which have special properties that are opposed to the "regular geometric shape" and that property is a property of similarities (Brdar, 2012). To make it more visually **Fig. 1** help us to imagine how does fractal look like.

When we look at a fractal, it seems as a whole that is made up of several parts, i.e., has the property of a sistem. Every time you zoom in to the fractal him looks like the whole system and so it goes usually to infinity. The basic properties of fractals are:

- Self-similarity
- The fractal dimension
- Iterator desing

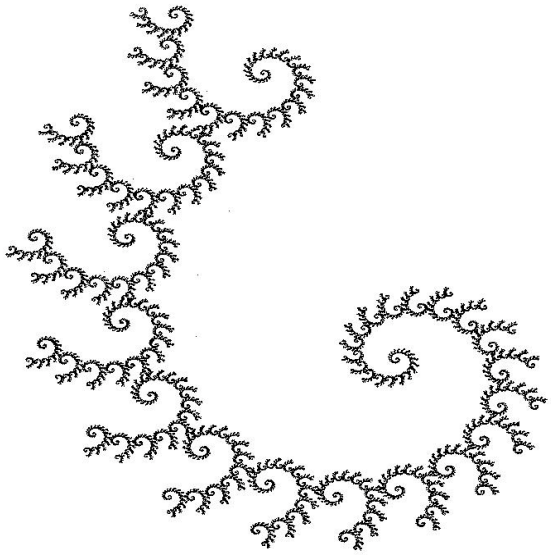

Fig. 1. Spiral fractal

The first property of fractals is self-similarity, a self-similar object is exactly or approximately similar to a part of itself (i.e., the whole has the same shape as one or more of the parts). Many objects in the real world, such as coastlines, are statistically self-similar, parts of them show the same statistical properties at many scales (Mandelbrot, 1983). Self-similarity has important consequences for the design of computer networks, as typical network traffic has self-similar properties. For example, in teletraffic engineering, packet switched data traffic patterns seem to be statistically self-similar (Mandelbrot, 1983). Self-similarity is present also in the living world, the tree has a self similar property, blood vessels and lungs. So that the fractal is a one of many codes of creation of the nature. To better picture how self-similarity looks like, the **Fig. 2** shows a famous painting of Katsushika Hokusai-The Great Wave off Kanagawa, the wave he's self-similar properties because if you zoom in to the top of the wave it consists of smaller waves. Shortly characteristic of self-similarity is a property of the object that resembles himself, no matter which part of the is observed and how many times we zoom into the object.

The next property of a fractal is the property of fractal dimension. Fractal dimension can be explained as a ratio providing a statistical index of complexity comparing how detail in a pattern (strictly speaking, a fractal pattern) changes with the scale at which it is measured.

Fig. 2. The great wave of kanagawa

It has also been characterized as a measure of the space-filling capacity of a pattern that tells how a fractal scales differently from the space it is embedded in. Unlike fractal dimension Euclidean dimension is used to mean the line (one dimension), size (two dimensions) and the space (three dimensions) and may be any naturally occurring number or zero. In contrast fractal dimension is used to express the density of an object that fills the space, or how many new parts occurs when increasing the resolution. Third characteristic of fractals is a property iterator. designing. This property means that the object generates with some mathematical or geometrical method, so that the basis (initial) object properties iteratively implanted generator.

3. FRACTAL PROPERTY OF ADMINISTRATION

Repeatedly in the literature which criticizes administration we find that administration grows more than the needs of society itself, especially in developed countries where she one goes through the production potential of a given country. Now we can ask questions such as: Why is it so?. On the one hand the answer is related to politics. Because every politics needs administration to be able to realize their goals and seeks to infiltrate its members to stay longer inauthority. Therefore, it comes to bureaucratic authority, which is government basis on the administration and government of administration. In this part of a paper I will show that the Administration has all the properties of fractals and that because of this policy has a great potential to build a huge non-profitable administration.

3.1. Self-Similarity of a Administration

Property of self-similarity of fractals can be explained in terms of administration as follows: The administration of a country can easily be imagine as a pyramid, because the administration of a country is a system composed of several parts, what is shortly a definition of a system. This "pyramid of administration" before we zoom in to looks smooth. When you start to zoom in the administrative pyramid, we see that it is composed of a growing number of smaller pyramids. These smaller pyramids are given to explain by means of relations of subordination and superiority-hierarchy. The development of society led to the establishment of a growing number of organizations to which each of us is to a greater or lesser extent involved, so has also came to the development of administrative organizations that have begun to occupy the place in our life.

Why administrative organizations tend to increase over time described C. Northcote Parkinson, better known as Parkinson's Law. According to this law jobs in the administration, can be always stretch to expanded as many servants as are available to them and fill the available time. According to Parkinson, among other things, there are two factors that affect the numeric increase in administration. The first is the tendency of each officer is trying to increase the number of his subordinate employees, not the number of rivals. This is accomplished in the following manner: Servant "A" has a lot of work, then he will not seek just one new employee because in that case had to share work with him and thus would minimize his significance, also look for career advancement and he would have a rival. That is why the official "A" ask for two officials "B" and "C". Servant "A" will share the work between "B" and "C" so that he becomes the boss. Over time this two (B and C) will employ two new servants (D and E) and so on up to practically infinity. The question is whether there will be enough work for all employees? This question can be answered according to the second fundamental principle of Parkinson's Law and that is when the number of employees increased so much, they make up work for each other and they are all too busy (Blažević, 2010). Because the job in the administration is "expandable" and new jobs can be easily invent (primarily a political decision) and recruit more people as superiors and subordinates every level of administration looks the same. With the boss at the top and subordinates under him and at the subordinate level job can be share with a boss at the top and subordinates at a bottom and where again the subordinates can be divide up the work where one will be the boss and other subordinates and so on. This is why the first property of fractals meets administration, because at all levels administration is similar to the whole system of administration as illustrated by **Fig. 3**.

3.2. Fractal Dimension of Administration

According to the second feature of fractals, fractal dimension, which gives insight into the extent to which a fractal fills the space in which it is observed. By observing the administration of one country (Croatia) we can see that the administration is composed of ministries, government offices, public administration organizations and government office in the counties and at the local level of County, Cities and Municipalities. In all of these administrations call them "basic administration" there are still some offices and organizations that cover every part of our lives such as birth, school enrollment, monitoring of schools, health insurance, social security, entering deceased personsin the register etc. We see that the administration fulfills 90%, or even more percent of our lives, so when we zoom in, in each of the "basic administration" we see that we reach an even greater number of specific administration that have an impact on certain aspects of our lives. So that administration has the second characteristic of fractals.

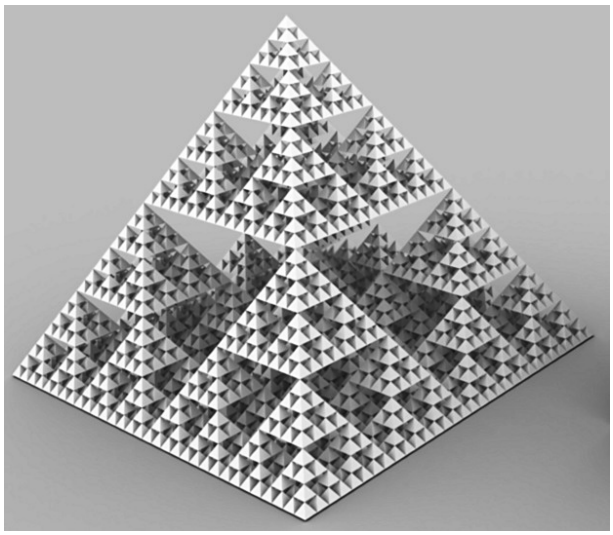

Fig. 3. Self-similarity of a administration

3.3. Iterator Designing of Administration

To prove that this property of fractals can be applicable to the administration, administration shall have the ability to generate a certain mathematical or geometrical method, so that the basis (initial) object built iteratively properties generators. The mathematical formulas that can be applied here comes from Cyril Northcote Parkinson. It is linked with his law that I mentioned in the part referring to the self-similarity of the administration. This formula looks like this:

$$x = \frac{k^m + L}{n} \quad (1)$$

Where:

x = The number of new employees each year
k = Number of employees who seek advancement by employing new subordinates
m = The number of hours worked per employee, required for completion of the memorandum of used office market in the domestic traffic
L = The difference between the age of appointment and retirement
n = Number of subdivisions of office staff who actually processing

This formula describes mathematically Parkinson's Law, which has proven that it works everywhere. In geometric method administration can be presented as a pyramid, where the pyramids of “basic pyramid” have below them pyramids and below them that pyramid, they have sub, sub-pyramids. As in **Fig. 4**.

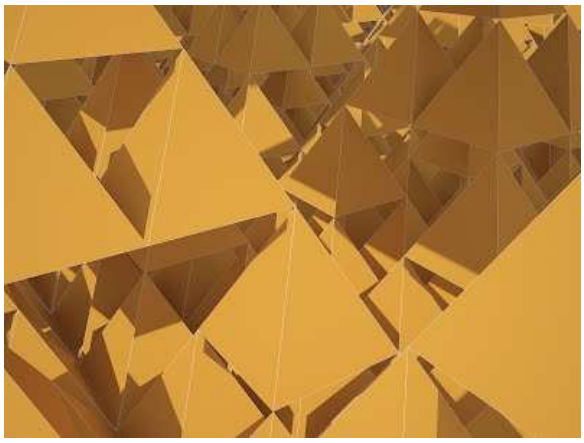

Fig. 4. Sub-pyramids

Therefore, the administration fulfills third characteristic of fractals. Now we see why the administration has such great potential to become huge and large, precisely because it has the properties of fractals and especially the basic feature of self-similarity.

4. CONCLUSION

A major contribution of this study was the love for matematci and administration. Having already proved that fractals exist in the economy it was time to show that fractals are in administration. We must realize that all science cannot exist for itself, but should connect and use other methods that may seem outlandish at first glance. Today we live in a world that presents us with a number of challenges that cannot be solved without thinking outside the box. Therefore, to solve the problems of the 21st century, we need a way of thinking of the 21st century and the combination of all the sciences in order to understand this complex universe that surrounds us and one that we ourselves created in order to find out its meaning and our place in it.

5. ACKNOWLEDGMENT

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