Global Scaling

What is Global Scaling®?

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Most of our modern technological devices were developed only after previous long-term intensive research of empirical data and relevant parameters. Many of the sizes and scales now in use have been found through "experience" and have remained stable factors for over a hundred years. Why? The answer lies in Global Scaling®.

Nature's Measure

We like to think in linear scales and are used to measure in nice and regular intervals. Other scales are unknown to us. All of natural science itself uses linear measures in the mathematical descriptions of many of its models.

Serious doubts about the actual usefulness of these simple scales for the measurement of natural structures came with the discovery of fractal dimensions. The advent and mass production of personal computers made it possible to create beautiful and astonishingly natural-looking shapes using only very simple algorithms.

However, already 30 years ago biologists (Schmidt-Nielsen, Shnoll, Cislenko, Shirmunski et.al.) had discovered that organisms whose body sizes proved to be within certain ranges of measurement seemed to have much better chances of survival and reproduction. Surprisingly, this appears to be independent of the type of specie investigated.

The decisive discovery came from the Ukranian biologist Cislenko. In 1981 he published the results of 23 years of research that showed unequivocally that biologically favourable measures are situated at equal distances along a longarithmic scale. Cislenko was able to prove this fact for 4727 different mammalian species, over 5000 different kinds of reptiles, 452 bird kinds, some 1900 kinds of amphibia, 381 kinds of sweet water fish, 218 fish of the northern polar sea, more than 21000 kinds of insects, as well as numerous plants, fungi and bacteria. Nowadays, this phenomenon is recognized as logarithmic scaling in the frequency distribution of biological species with reference to the body size and body mass of organisms.

The Global Scaling Phenomenon

At about the same time physicists discovered a similar phenomenon of scaling (logarithmic scale invariance) in the frequency distribution of elementary particles based on the particles' rest mass (Bjorken, Feinmann, Müller). In 1982 Hartmut Müller was able to show this for all known particles, nuclei and atoms, but also for asteroids, moons, planets and stars.

Scaling is a global phenomenon, in fact, it may be the very blueprint of the universe itself. In a series of articles (1982 – 1989, Institute for Scientific-Technical Information of the Russian Academy of Sciences) Müller first published the fundamentals of a theory of Global Scaling® which today can be regarded as one of the best confirmed hypotheses within the natural sciences. It is based on the statistical analysis of gigantic amounts of data and is being successfully applied in science and technology today.

Indepth mathematical investigation of the phenomenon has shown that the concept of standing wave processes is the most likely and appropriate model to yield these structures. At the bottom of the Global Scaling® phenomenon there are standing wave processes on the logarithmic (and *not* on the linear) scale of measures.

Mathematically speaking, these wave processes occur nowhere else but along the number line itself. Reflections will form further substructures. The fractal set emerging from this process is responsible, among other things, for the distribution of prime numbers.

Regarding real physical scales, such as the distribution of masses in the universe, a model of vacuum waves and matter waves can be applied. Such wave processes do in fact manifest themselves in nature and can be technologically exploited.

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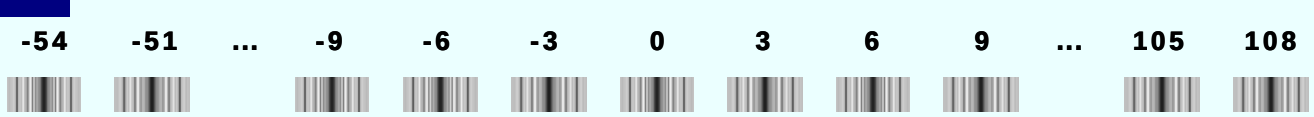

Prognosis of Unknown Parametres

Global Scaling® Theory (GST) is the first of its kind to mathematically describe the distribution of preferred parametre values in nature and is also able to explain the cause for this distribution.

The sum of probabilities that makes a certain physical value appear at a certain position along the logarithmic scale can be graphically represented by means of the so-called Müller fractal.

Knowledge of just this fractal set combined with additional understanding as to how the fractal is used in a specific application allows the Global Scaling® engineer to quickly and efficiently prognosticate values and parametres that otherwise would have been found only through a tedious process of trial and error.

Thus it is not surprising that applications that have worked in a stable way for several decades will show measures completely compatible with Global Scaling®. A few examples:

- Ball bearings
- Cogged belts
- Projectiles of fire arms
- Toothing of postage stamps

The fine structure of the Müller fractal at one of the node ranges along the logarithmic line. The darker the area the higher the probability of finding a natural value in this region.

Currently optimization projects according to the theory of Global Scaling® are undertaken in various fields. Some of them have progressed far enough to yield positive results in comparison measurements demonstrating the efficiency of the method applied. Naturally, customers who ask for the optimisation of their products will have an interest in protecting the newly gained results which is the reason why further details cannot be published at this time. Of particular interest were the Global Scaling® optimisation projects in a European combine that was able to save vast amounts of money due to new parametres. Another big company applied a new design optimised according to Global Scaling® to a product that had been regarded as stable and mature for decades. The result was a significant increase in its efficiency and durability! One can imagine how inconceivable this seemd to the specialists working at the company that did not have any knowledge of Global Scaling®.

New Technologies

The mathematical realisation that the distribution of natural measures is determined by standing wave processes does in fact manifest in the physical world. As a result, for example, space (vacuum) waves can form that can be clearly differentiated from the known electromagnetic wave of radio transmissions. In Global Scaling® the general term for this kind of wave is the **G-wave** (in analogy to the gravitational wave), where the G-wave, however, must also be differentiated from Einsteinian gravitational waves.

The significant difference between G-waves and electromagnetic waves or Einsteinian waves lies in the fact that G-waves do not propagate in space and time but exist – in macroscopic analogy to the known phenomenon of non-locality in quantum physics – everywhere simultaneously.

Using appropriate technologies these wave processes can be technically exploited and will open the way for completely new applications. One obvious application is the transmission of information using G-waves as the already existing channels (carriers) for communication. A first public demonstration of wireless language transmissions without an artificially generated carrier frequency was carried out between Moscow and Bad Tölz (Germany) at the IT & Media Days on October 27th, 2001.

Meanwhile, several European universities have shown an interest in this original method for wireless data transfer which is able to overcome great distances both through the air, the vacuum, and even solid bodies at extremely low energies. When carried out correctly, this form of data exchange occurs without any of the known biological side effects of electromagnetic waves. One Austrian university is currently putting forward the G-Com® technology together with the inventing team of the Institute of Space-Energy-Research in Wolfratshausen, Germany.

Another public demonstration of G-Com® technology has taken place on February 21st, 2004 at the Technical University of Berlin. Here data transfer between two notebooks has been demonstrated. All that is required is a particular piece of software. That is why the procedure can be demonstrated on a computer from the audience.

It is easily conceivable that this form of G-Com® technology is far from the only possible application of the theory of Global Scaling® – which incidentally was also used successfully for payload optimisation within the space program Energija/Buran of the former Sovjet Union. Beside the possibility for optimising lucrative process parametres, Global Scaling® also offers possibilities of new and fundamental innovations that will be as fascinating and far-reaching as were formerly the inventions of the steam engine, the alternating current or the semiconductor.

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