A SYNOGRAPH: THE COORDINATE SYSTEM VIEWPOINT

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Abstract

An article presents a new, next significance of the word *synograph* – from the coordinate system point of view. On the author`s best known this approach is unfamiliar in a literature, and offers useful domains of next recognition. Some narrowly used *synograph* meanings – in a software engineering, linguistics and a medicine – are illustratively mentioned, too.

Key words: synograph, coordinate system, kinematic curve, UML, XML, symbol redundancy, character recognition, Braille alphabet, dentistry, paediatrics, transfusion.

SYNOGRAF Z POHĽADU SÚRADNICOVÉHO SYSTÉMU

Resumé

V práci je opísaný nový, ďalší význam slova synograf – z pozície súradnicového systému. Nakoľko je autorovi známe, tento prístup sa v literatúre nevyskytuje, a ponúka uižitočné oblasti ďalšieho poznávania. Zároveň sú ilustračne spomenuté niektoré úzko používané významy slova synograf, a to v softvérovom inžinierstve, lingvistike a v medicíne.

Kľúčové slová: synograf, súradnicový system, kinematická krivka, UML, XML, nadbytočnosť symbolov, rozpoznávanie znakov, Brailleova abeceda, zubné lekárstvo, pediatria, transfúzia.

Introduction

An university courses of elementary mathematics as well as physics for engineering students are intrinsically joined. They are responsible for, maybe, appropriately wide range of viewpoints on relevant objects in mathematical/physical world. This eyeviews spectrum has dynamically changed extension and content – in connection with the developing knowledge.

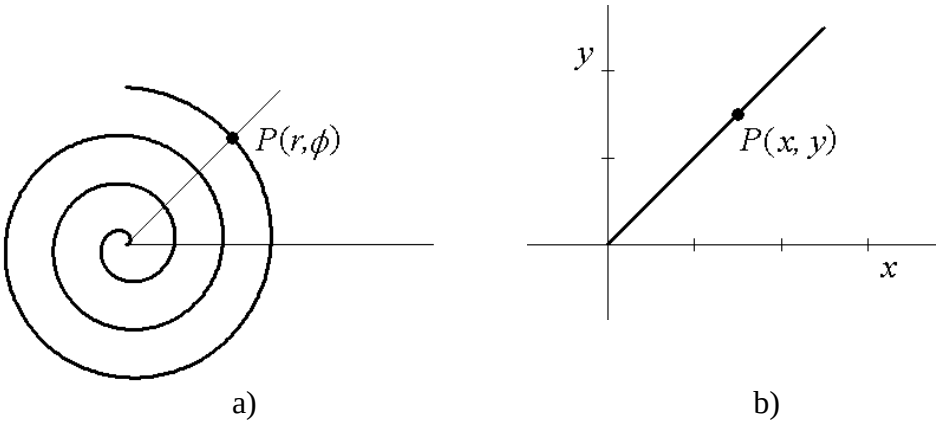
Synograph is the graphical equivalent of synonym. Synograph denotes various symbols with the same/very similar meaning.

1 Coordinate system viewpoint

An Archimedean spiral, shown on fig. a), represents thankful curve example, the equation of which in **polar** coordinates is of a very simple form $r(\phi) = k\phi$. As angle ϕ increases, radius r increases. The graph is endless spiral, going infinitely often around the pole. Dependency of polar coordinates is *linear*. Polar coordinate system is only one of **many ways** to describe points in the plane by pairs of numbers. *Linear* dependance of **rectangular** Cartesian coordinates x, y, $y(x) = kx$ is of a quite different graphical reresentation. The graph is endless straight line.

Both lines (straight line and a spiral) are of a different shape and of the same, linear, type of coordinates dependance. Both graphs contain latent infosources, e.g.:

– in a framework of kinematic geometry, they figure a trajectory of mass point moving with a constant amount of velocity; both lines can be represented as kinematic curves,
– within the scope of a dynamical systems, both graphs can be perceived as a phase trajectories in a phase space.



a) b)

Fig. Linear dependency of planar coordinates:
a) polar coordinates, $r = k\Phi$, b) Cartesian coordinates, $x = ky$.

2 Miscellaneousness of meanings

Each branch of the ones mentioned below involves the whole families of symbols using. And the phenomenon of various symbols (with an identical/similar sence) occurence is common. The borders between sectors are not sharp, many subbranches are of an interdisciplinary character.

Software engineering: synographs (graphical synonyms) – multiple symbols with the same meaning, i. e. synograph as a symbol redundancy in UML/XML [1], [2], [3], or e. g. in Braille requirements for labeling and the package leaflet to address the particular needs of blind and partially-sighted patients [4].

Linguistics: synographs (even synophones) – the words which look or sound very similar to other words; they represent an alternate spelling of a word, such as “center” or “centre” [5], [6].

Medicine uses synograph/synography in amazingly various fields; they are e. g.: dentistry [7], gerontology [8], paediatrics [9], pathophysiology [10], plastic and reconstructive surgery [11], transfusion [12].

Conclusion

An article has presented so far unused (on the author`s best known) meaning of the word *synograph*, especially from the coordinate system point of view; together with some more or less familiar significances of this linguistical technicality.

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