Hyperbolic Cartesian tree

Currently, there are prerequisites for compiling a single picture of knowledge [Wojciechowicz, 2014]. World perception is a person's passive contemplation of the world at a phenomenal level in the form of emotionally colored sensations, perceptions, and perceptions [Salnikov, Sandulov, Gutseriev, Kalnoy, 2014]. One of the features of the modern understanding of worldview is the lack of a mathematical approach. Mathematical dimensions in philosophy can be drawn from a section as close to it as psychology.

One of the common psychological models is the three-factor personality theory G.Yu. Eysenck [Eysenck], who checked the independence of factors of extraversion, neurotism and psychotism.
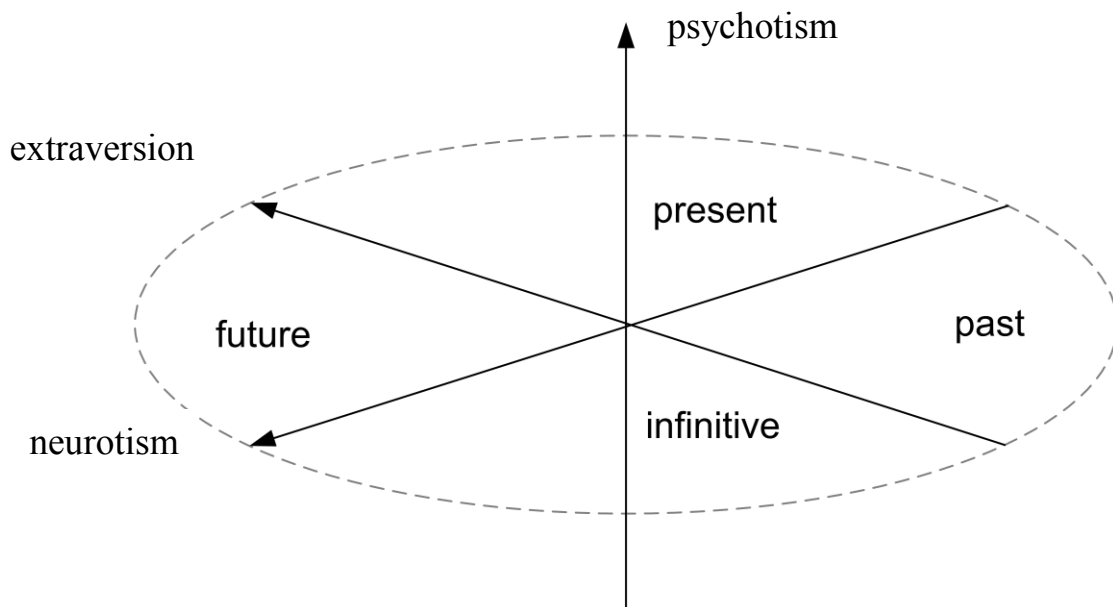

Fig. 1 Three-factor personality model.

In the horizontal plane, one can distinguish the components of the worldview: value-normative (indefinite), emotional-volitional (future), practical (present), analytical (past).

S-shaped curves play an important role in the development of nature and society. A technology life cycle has been proposed for technologies [Glazyev, 2018]. S-shaped curves play a significant role in technology [Karamyshev, 2008]. A similar form of changes in the evolution of society has also been identified [Zharov, 2009]. In economic theory, the function of reproduction is considered [Zang, 1999]

This article proposes a complication model in the form of a chain of S-shaped curves, each of which goes through four stages: preparation, development, stabilization, conservation. Difficulty periods are shown in fig. 2. The following explanation is proposed to highlight them:

- the preparatory stage is characterized by the needs of compensation of disturbances from the previous level;

- the development stage is associated with the appearance of positive feedback that stimulates development;

- the stabilization phase is associated with the appearance of negative feedback that limits development;

- the conservation phase is characterized by a stable existence, and is not included in separate groups of philosophical concepts.

The literature notes the existence of order between philosophical categories [Balashov, 1997]. To measure philosophical concepts, it is proposed to place them on a spherical surface. Moreover, it is assumed that the abstraction proposed by David Hume as a sequence of impressions and ideas [Gritsanov, 2002] increases from bottom to top. In this case, it is possible to distinguish regions on the abstractness scale [Borchikov, 2014].
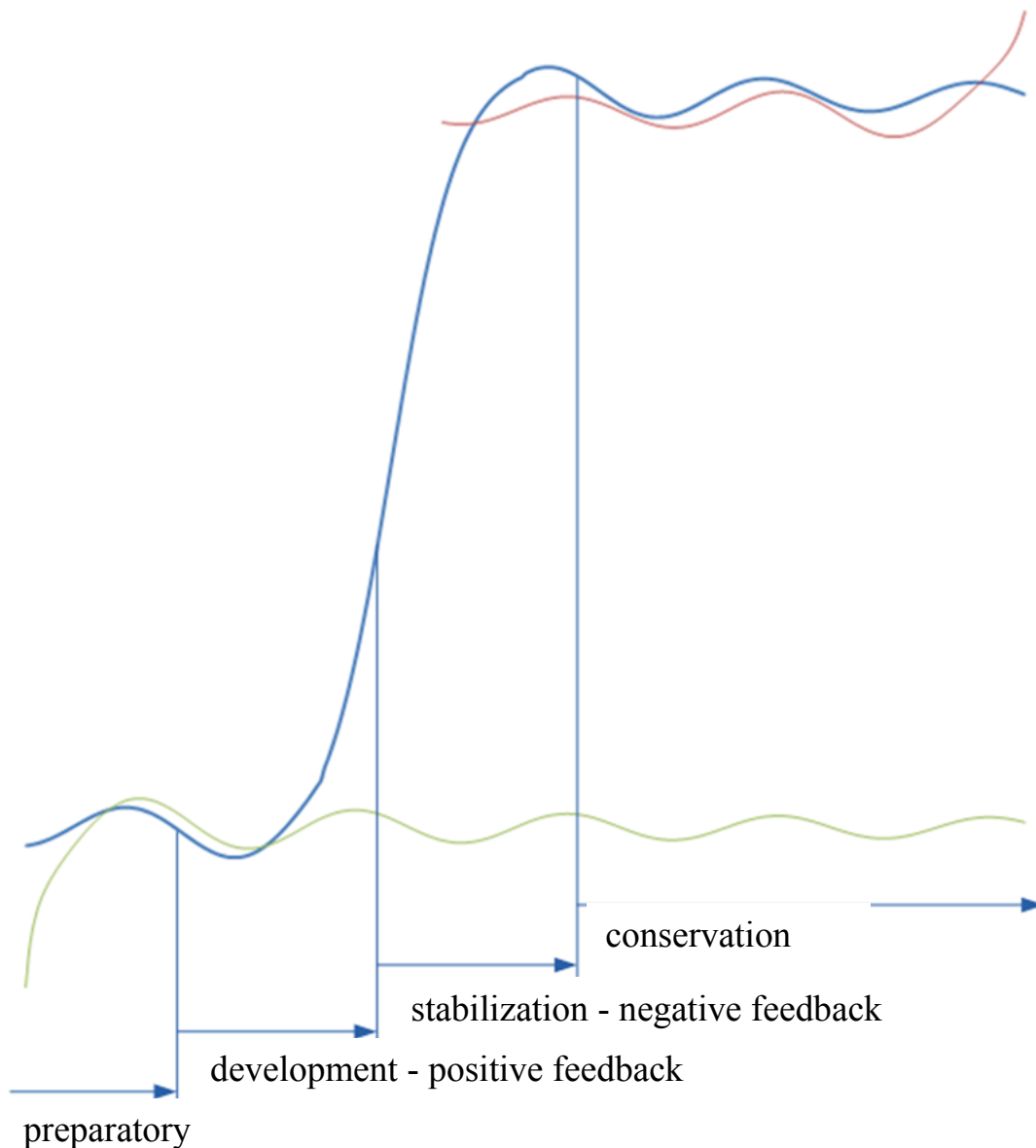
Fig. 2. Periods of complication

In order to avoid restrictions, it is assumed that the direction to the points located on the hyperboloid of revolution, which is described by the formula $y = 1/x$, is measured. Accordingly, the angle between the axis and direction is determined through the arctangent of the y/x ratio.
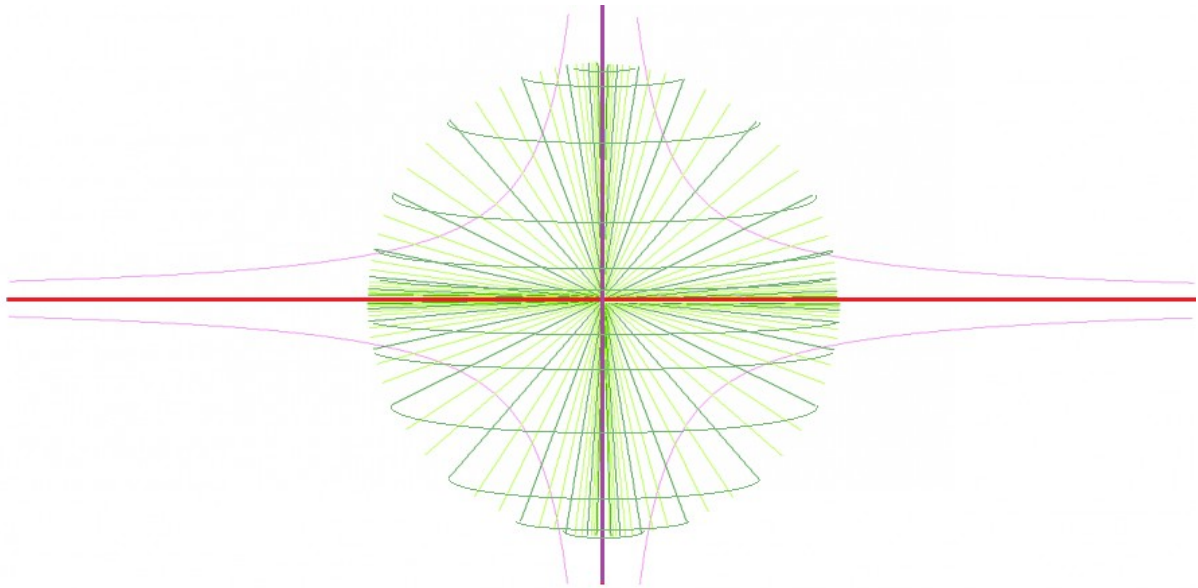
Fig. 3 Coordinate system for placing philosophical concepts.

This coordinate system supports the dualism of concepts proposed by Rene Descartes [Alekseeva, Tuzova, 2002]. The theoretical part is located in the upper part, and the vital-practical level in the lower part. The complexity of abstract and materialistic concepts increases from the edges to the center, as shown in Fig. 4.

Fig. 4 Difficulty levels

Using an approach based on dualism, a spherical coordinate system, we can propose a method for placing philosophical categories on a sphere using the method of expert estimates. This approach was used in evaluating the terms for constructing enterprise modeling notation [Podorov, Komandirov, 2017], [Podorov, 2015], [Podorov, 2018].

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