

Polytopism Manifesto

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- Dual Process Theory outlined 2 types of cognitive processes the System 1, S1 and Systems 2, S2. S1 is intuitive, automatic, evolutionarily old and non-standard whereas, S2 is by contrast analytic, slow, evolutionarily recent and standard.

Table 1 shows few trends, properties or domains associated to S1 or S2.

S1 and S2 are expected to stand out as complementary rather than conflicting and as inclusive rather than exclusive.. High complexity psychological or engineering investigations show that the dominant S1 S2 narrative for any reality levels and any conditions is an over-simplified 2D view. The S1 S2 that is, the nature-mind Cartesian view appears to be over-simplified and un-effective for high complexity advent. To face high complexity we need to continue the road from Dual to Multiple Process Theory.

Table 1 Dual Process Theory

System S1	System S2
Art	Engineering
Horizontal	Vertical
Universal	Individual
Feminine	Masculine
Nature	Mind
Nonsense	Sense
Nonstandard	Standard
Unconscious	Conscious

- To achieve balance, equilibrium, command and control of high complexity situations and projects we need to increase the dimensionality of associated cognitive architectures. Polytopism is the movement looking for high dimensionality of cognitive and intelligent architectures for high complexity projects implementation in different domains. Polytope is the general term of the sequence: point, line, polygon, polyhedron and so on. The dimensionality increasing method is based on iteration and included middle steps [1]. General polytopic roadmap, GPTR, general reference architecture framework, GRAF, and 8D Program will result as polytopism products.
- Fig 1 shows the polytopic roadmap to follow in order to reach a dynamic equilibration functionality required for cognitive or for intelligent projects [2]. The polytopic roadmap outlines 5 stages or levels: 0D, 1D, 2D, 4D and 8D. The road starts with objects description, 0D. Then, follows iteration and included middle steps. It is a 2D zigzag between S1 and S2. The 4D is the 2D of 2D process in which the 2D is coupled to the dual 2D under the control of the internal cube, the self, This stage corresponds to self-evolvable, SE, systems. The 8D will result by developing towards detailed 4D any of the 16 vertices of the previously obtained 4D framework. The result corresponds to SE of SE intelligent systems [2].

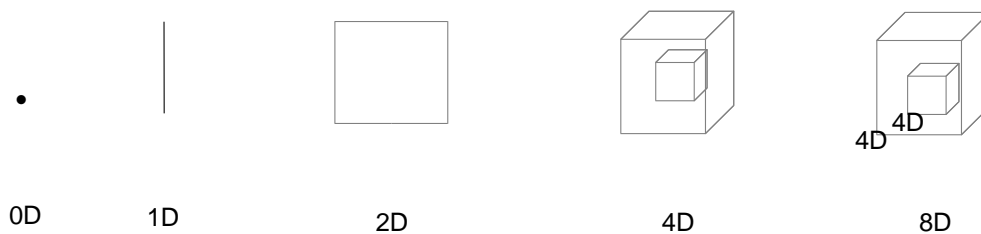


Fig. 1 General Polytopic Roadmap

The complete road involves both directions from 0D to 8D and from 8D to 0D.

- Some examples of polytopic roadmaps have been shown in Table 2.

The main observation is that fields ranging from inorganic materials to biosystems and cognitive systems, to engineering designs and logical- mathematical models, socio-economic systems and artistic creations share similar or isomorphic reference architecture frameworks and polytopic roadmaps [1,2].

First row of Table 2 shows the polytopic roadmap for high complexity. Similar roadmaps are supposed to be valid for numerous studies in engineering, science, society and culture

Table 2. Polytopic Roadmaps

Dimension Domain	0D	1D	2D	4D	8D
Complexity	descriptive	adaptive	evolvable	self-evolvable SE	SE of SE
Painting Artists	pointillism Seurat Signac	stripe painting Klee Molinari	neoplasticism Mondrian van Doesburg	hypercubism HC Picasso Dali Matias	HC of HC
Monuments	Statue Louis XIV	Luxor Obelisk	Triumphal Arch	Great Arch	

The domain of painting is related to artistic movements as neoplasticism, dimensionism, and hypercubism. It refers to the artists' technique of breaking down and reassembling dots and objects into various geometric shapes as polygons, cubes or polytopes to outline multiple perspectives. The domain of monumental architecture is illustrated by the historical axis in Paris. It should be noted that for many domains the 8D is less examined or do not exists.

- The 8D Program manifesto emphasizes the possible steps for high complexity systems understanding and for projects implementation.

This manifesto is a call for, general polytopic roadmaps GPTR, general reference architecture frameworks GRAF, and for 8D Program [2]. Study of the 8D may be our gateway forward into moving past the standards or sense models to what lies behind the scenes, to the high complexity advent of non-standard or non-sense models, and after unifying the standard and non-standard, to post-standard, into 4D, then to 4D of 4D that is to 8D and further. Polytopism developers hope that by design and construction of their local environment according to mind principles, they could create conditions for a self-evolvable cognitive and intelligent unified world. Polytopism is intended to be reversibly implemented to all aspects of life, from foods, clothes, furniture and architecture to agriculture, industry, economy, society, and culture. Introducing this ground-breaking movement of practical and theoretical interest and the key areas for the high complexity, for cognitive-like, 4D, and intelligent-like 8D engineering and culture, the polytopism is of highest interest for our future.

References

1. Iordache O.: Roads to Higher Dimensional Polytopic Projects-Reference Architectures Springer, Cham, Switzerland (2022)
2. Iordache O.: General Reference Architecture Frameworks, Springer, Cham, Switzerland, (2024)