

The Formal Axiomatics of Space in Fine and Literary Arts

Traditional classifications of arts rely either on criteria of artistic perception, different space dimensions or different techniques and materials. Types of sensual perception are applied by authors distinguishing visual (sight – painting), auditive (hearing – music), gustatory (taste – culinary arts), olfactory (smell – cosmetic art) and haptic arts (tactile sensation - sculpture). In our view such taxonomies involve too much psychologism and should be replaced by a **dimensional systematics** of arts:

A. **Visual arts** (*Bildkunst, bildende Künste*, their classification and German terms quoted according to Theodor Lipps's *Ästhetik*¹):

- **graphic arts** (*Flächenbildkunst*): painting, poster,
- **relief arts** (*Reliefkunst*): engraving, etching,
- **plastic arts** (*Rundplastik*, also haptic or tactile arts): sculpture, bust,
- **space arts** (*Raumkünste*): architecture, landscape planning.

B. **Literary arts** (or language arts, cf. *Language Arts and Social Studies*²):

- **oral tradition** (Rus. *slovesnost'*, Germ. *Wortkunst*): songs, spells, sayings,
- **poetic art** (*Dichtkunst*): lyric, epigram, epic,
- **fiction** (*belles-lettres*): novel, short story,
- **dramatic arts** (*Bühnenkunst*): tragedy, opera.

C. **Figurative arts**:

- **scenic arts** (*Bühnenkunst*): drama, ballet, masque,
- **performative arts**: dance, pageants, march, artistic gymnastics.

D. **Acoustic arts** (music, auditive arts):

- **vocal music**: singing, opera,
- **instrumental music**: sonata, cantata, oratory.

E. **Hi-tech arts** (high technology arts, electronic arts):

- **projective arts**: photography, film, documentary film,
- **television art**: telenovel, TV sitcom, dramatic adaptation,
- **computer art**: computer game, computer thriller.

Particularism finds its partial justification as a technological approach to art convenient in professional education. School courses training professional artists do not focus on general aesthetics but mastering techniques peculiar to different industrial arts. Differences between sculpture, engraving, oil painting, lithography, aquarelle, enamelling, etching etc. concern problems of different

¹ Theodor Lipps: *Ästhetik*. T.1. , *Grundlegung de Ästhetik*. Leipzig 1920, 104ff., S. 165, 222.

² *Language Arts and Social Studies*. Chicago: World Book, 1988.

materials, tools and techniques. Some have to do with the chemistry of industrial paints (aquarelle, oil painting, enamelling), some concern different moulding and carving materials (metalworking, woodworking) and some are derived from different graphic techniques (lithography, etching). However, hardly any of them is of real import to the essence of art. It is not the material substance of the pictorial sign that makes them into a work of arts but an abstract form of artistic fantasy or imaginative ideation that gives the observer the same feeling of the world hierarchy of cultural values as a church mass. This aesthetic, religious or spiritual feeling is not specific to an icon, an idol statue of a saint or to a hymn and legend sung to his honour. Their passionate glorification of some values, stories and authors, combined with an equally ardent condemnation of negative values, is the very essence of all ideologies.

Literary theory cannot do without delimiting its place in **art theory** that enquires into general dimensions and sign systems in different arts. Positivist science emphasised the social function of art and attempted to base its theory as ‘the philosophy of art’.¹ G. Semper was disappointed with the vagueness of traditional aesthetics defined as the study of beauty and the beautiful, and tried to replace it by a new discipline called *Kunstlehre*. F. Grosse suggested a new field called *allgemeine Kunstwissenschaft* which became very popular in the post-war art theory.² Another influential term was found also in *Kunsttheorie*.³ Their efforts to lay reliable foundations of aesthetic sciences seemed to converge in the idea of the dimensional classification of arts.

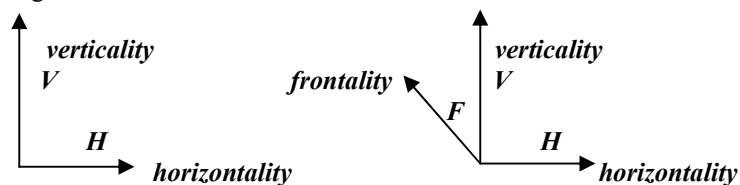


Table 1. *Co-ordinate spaces of graphic and plastic arts*

Most genres of art can be formalised mathematically as an n -dimensional Cartesian co-ordinate space plotted from elementary physical properties such as time, space, colour and tone. From this viewpoint drawing and graphics are 2-dimensional art while sculpture and architecture are 3-dimensional arts. Spatial dimensions in fine arts are not identical to their representation in modern geometry or topology, they are tailored according to human perception and the vertical posture of the human body. By **verticality** (or height) V we

¹ Hippolite Taine: *Philosophie de l'art*. Paris 1865.

² E. H. Gombrich: *Kunstwissenschaft*. Zürich 1952.

³ E. Panofsky: Über das Verhältnis der Kunstgeschichte zur Kunsttheorie. *Zeitschrift für Aesthetik* XVIII, 1924, S. 330-300.

mean a set of points on a vertical line, by **horizontality** (or breadth) H a set of points along a horizontal line. Then an arbitrary drawing X may be defined as a subset of the Cartesian product $V \times H$ of all points in a 2D-space:

$$X = V \times H.$$

Oil painting adds a new dimension C called **coloration** and plastic arts add another dimension called **frontality** (or depth) F . Frontality is visually represented as a set of points on the line linking the artefact with the human eye. Then painting P is defined as a product of X with C and a sculpture S as a product of P with F .

$$\begin{aligned} P &= X \times C = V \times H \times C \\ S &= P \times F = V \times H \times C \times F \end{aligned}$$

Obviously, there is a wide difference between arts and individual artefacts. Arts feature as Cartesian products while artefacts are only their subsets.

Similar considerations help to give a formal axiomatisation to poetic metrics and music. Their three basic dimensions are time, tone and accent. Rhythm represents a complex unit of musical performance consisting of a series of accented and unaccented beats. In accentual verse we see the simplest unit in one foot defined as a regular rhythmic pattern repeating the same sequence of accented and unaccented syllables. If T stands for time and A means dynamics (accentuation), we may define rhythmic R as an abstract 2-dimensional coordinate space $R = T \times A$. If P denotes the pitch of tones on the axis of **tonality**, then music M is defined as a product of tonality, time and dynamics.

$$M = R \times P = T \times A \times P$$

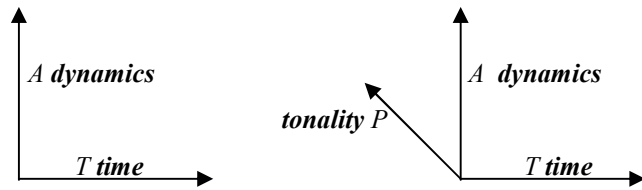


Table 2. *The coordinate spaces of rhythmic and musical arts*

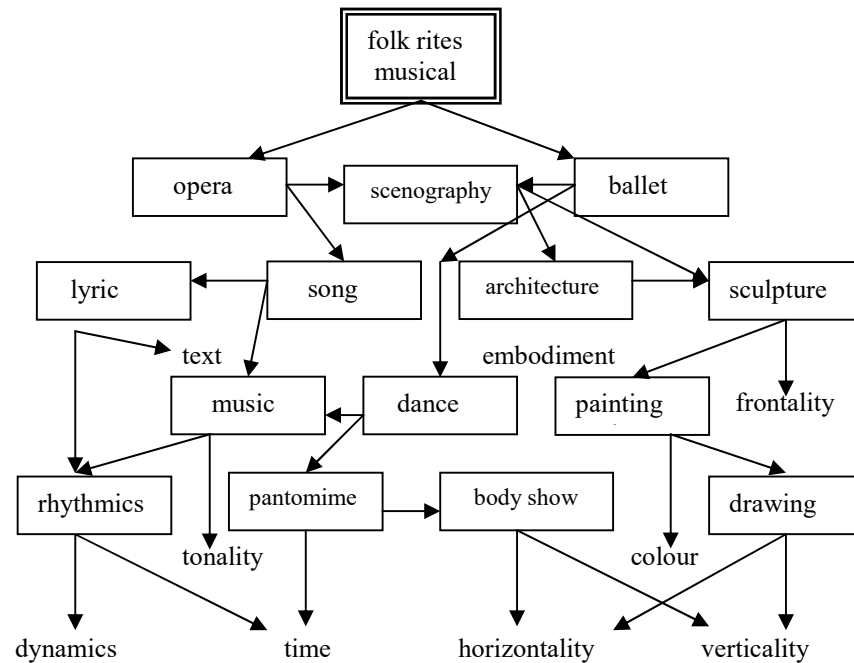
Such formalism allows us to outline a simple classification of arts. Every art is defined as an n -dimensional space with several co-ordinate axes. An art Ψ_i is said to be a **subart** of an art Ψ_j if its dimensions are all included also in Ψ_j .

$$\begin{aligned} \text{drawing} &= \text{verticality} \times \text{horizontality} & X &= V \times H \\ \text{painting} &= \text{drawing} \times \text{colour} & P &= X \times C \\ \text{sculpture} &= \text{painting} \times \text{frontality} & S &= P \times F \end{aligned}$$

<i>rhythmics</i>	= <i>time</i> × <i>dynamics</i>	R	= $T \times A$
<i>music</i>	= <i>rhythmics</i> × <i>tonality</i>	M	= $R \times P$
<i>lyric</i>	= <i>rhythmics</i> × <i>text</i>	L	= $R \times W$
<i>song</i>	= <i>music</i> × <i>text</i>	A	= $M \times W$
<i>ballet</i>	= <i>dance</i> × <i>music</i>	B	= $D \times M$

Table 3. *Formal definitions of arts*

Table 4 demonstrates an irregular pyramid leading from 2-dimensional arts up to multi-dimensional stage performances such as ballet and opera. Thanks to syncretism of modern genres its peak now seems to be occupied by musicals but its place was originally reserved for communitarian rituals: ancient folk rites, court feasts, Catholic Church masses and public gatherings. When we attend a church mass, the material distinctions between liturgy, a sermon, a hymn, an idol and an icon are trivial and unimportant, what matters is their structural unity, their participation in one collective communion of souls and one spiritual rite watched by the local community of people.

Table 4. *The hierarchy of arts*

Louis Athusser and Philippe Sollers coined a new catchword '**semiotic materialism**'¹ for left-wing aesthetics emphasising the ontic priority of material signs in arts but underrated the role of social conscience and its rituals. Shakespeare's dramas can be perceived in different languages and sign systems without a considerable loss of their aesthetic charge. Their semantic message is translatable and convertible in various material forms. One artistic idea may find its expression and embodiment in bronze, stone or wood but these techniques of material elaboration concern only technical craftsmanship.

Modern art has scattered the original ritual **unity** into many unrelated genres that have abandoned the old ritual framework and have completely forgotten their ritual roots. The idea of **aesthetic monism** is that all arts convey one ritual meaning, they all adore the ruling social values but express them in different signs and iconic languages. When we isolate modern graphic, plastic and literary arts into unrelated crafts, we have deprived them of their social meaning and reduced them to an empty aesthetic form.¹

Extract from Pavel Běliček: *Systematic Poetics III. Formal Poetics and Rhetoric*. Prague 2017, pp. 9-13

¹ Jan Blommaert - April Huang: Semiotic and spatial scope: Towards a materialist semiotics. *Working Papers in Urban Language & Literacies*, paper 62, 2010.

¹ Rene Wellek - Austin Warren: *Teorie literatury*. Olomouc: Votobia, 1996, p. 29-30.