The Silent Revolutions in Ornament (1880–1920)*

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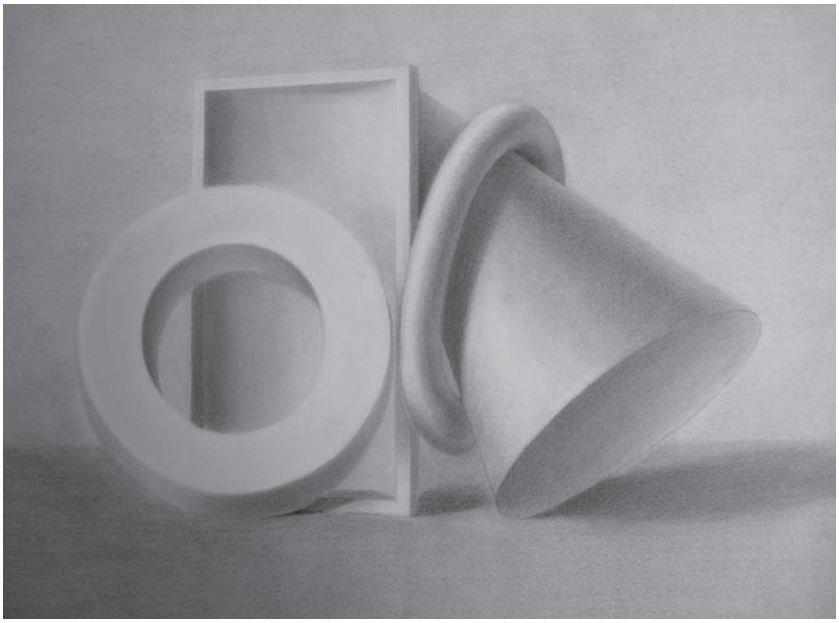
DURING THE CENTURY of the rise of science and the industrialisation of the developed world, ornament and teaching methods of decorative drawing were by no means subjects of secondary importance.[1] From a psychological perspective, this is suggested by the resistant, almost militant objections of the modernists in the 1920s. They distanced themselves from decorativism, which they regarded as a worthless 'padding of the void',[2] a pernicious, old-fashioned, aesthetic element leeching on the ethical purity of functional forms. Attempts to reform the applied arts, which, from the mid 19th century on, were of fundamental interest in Europe as well as in North America, focused primarily on the nature of decorative drawing.

This powerful intervention of the protective and supportive hand of the state was motivated by the idealistic-pragmatic belief that the new concept of decoration could be a major force in the revival and reform of style, and likewise also an unobtrusive means of stimulating economic growth. Ornament was an essential element in all areas of the applied arts and architecture. In the spirit of Gottfried Semper, decoration was regarded as an artistic ur-phenomenon, a crucial manifestation of artistic expression.[3] Ornament, however, was not to be applied arbitrarily. Rather, it should adhere to certain principles; it should respect the character of the materials and instruments used. With its clear form and symbolism, it should indicate the function of a given item. According to this concept, ornament embodied the idea of purposeful form (ornament as *Zweck-Form*, or *Zweck-Symbol*).[4] Applied consistently on flat surfaces such as upholstery, drapery, wallpaper and the endpapers of books, and in relief on small handicraft items, architectural façades and interiors, ornament was intended to play an important role in organising the perception of objects (*Structur-Symbol*),[5] in the visual configuration of form and space and in the constitution of a mental image in general. In the context of the pathos and idealism of the 19th century, ornament, on various levels, was supposed to harmonise the part with the whole, just as the individual was supposed to become an integral component of the organised unity of the universe. The majority, however, accepted the simpler interpretation of ornament offered by Eugène Grasset, according to whom a naked construction or pure surface was dressed with decorative patterns for the pleasure of the eye, for visual ease and 'adornment'.[6]

In addition to this structural, functional principle of ornament, which spread under Semper's influence, other theories developed in parallel, which valued the poetry, musicality, individuality and instinctive quality of the artistic gesture. At the end of the 19th century, in the wake of the arts and crafts movement, decorative art and the arts and crafts were considered equal to 'high art'. Thanks to Ruskin's arguments, an artist could find free artistic expression in ornament without having to adhere to certain given rules.[7] In this belief in the potential of ornament, one can see the origin of new, unfettered forms of 'free' ornament and the percolation of non-imitative, abstract, decorative forms into the sphere of art.



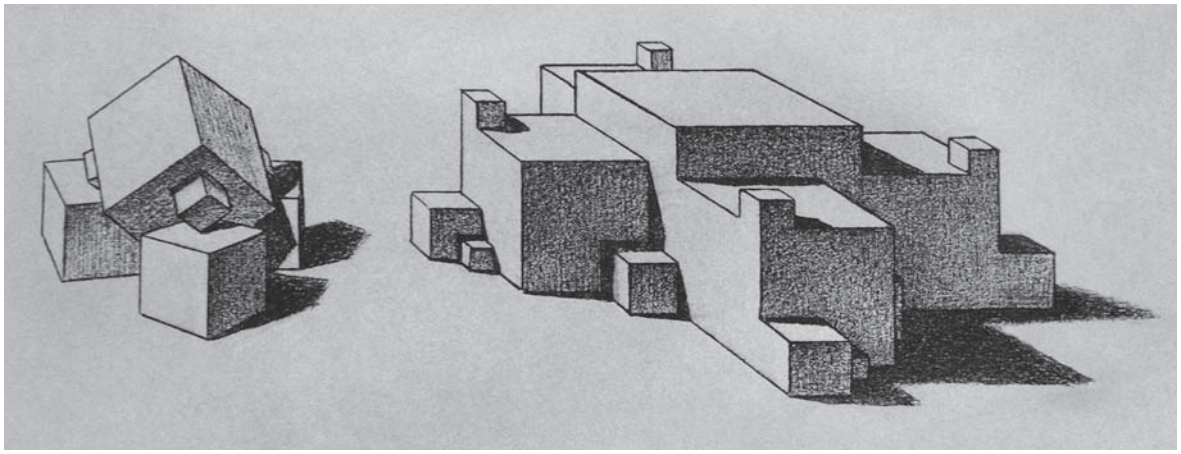
1/ ***Simidov, Elementary geometrical figures, Bechyně School of Ceramics***
1888
school archive
Photo: Bechyně School of Ceramics

Between the years 1880–1920, applied drawing and the construction or composition of ornament in the context of art education attracted unusual attention. This study treats these areas, as well as ornamental practices and theoretical reflections. The latter do not have to be seen in pointed contrast to the efforts of the modernists. On the contrary, they can be interpreted as the intelligible background and precondition for an understanding of the minimalist visual syntax of modernist approaches, which focused on the elementarism of universal forms and structural principles. Likewise, they can be interpreted as the background and precondition for an understanding of the origin of abstract expressionism and a number of innovations in the field of avant-garde, non-imitative art. In treating these themes, I shall introduce some cases connected with Central Europe and consider a number of interesting examples from the history, teaching and practice of the applied arts in the Bohemian Lands.

Applied Drawing and Ornamental Composition at the End of the 19th Century: the Elementarism of Modern Design

The influential book *The Bases of Design* (1898), by the English reformer Walter Crane, a theorist of ornament and supranational missionary for art education, quickly found its way into applied-art libraries and was translated into other languages.[8] After the World Fair held in London in 1851, England had a reputation as a pioneering country in the field of applied-art education. Its economic successes and cultural prestige were, to a certain extent, perceived as the result of the current priorities of the government, which invested a great deal of effort into the creation of a network of schools to train the craft skills and aesthetic taste of children, adolescent artisans and industrial designers. In 1901, the book was available in the Bohemian Lands in German translation as *Die Grundlagen der Zeichnung*.[9] The translation of the title indicates that the English word 'design' was translated as 'drawing' (*kresba, kreslení*).[10] The innovative concept of 'applied drawing' provides the key for an understanding of the distinctive teaching model at the trade and applied-art schools, and for an understanding of the methods of instruction in decorative art. The theory of applied drawing in the 19th century contributed to the creation of a new visual system, which inspired subsequent artistic generations.

In the supranational context, the teaching of decorative art and crafts was based on drawing.[11] The basic principles for standardised instruction in drawing, suitable for application in industry, had to be established. On the one hand, the aim of the aesthetic education of society was pragmatic (artistic training for industry). On the other hand, in the pedagogical field, it was strongly influenced by the idealism of the thinkers Heinrich Pestalozzi and Friedrich Froebel and their followers.[12] They believed that one had to cultivate the natural, creative instinct of the child and the maturing individual, and to develop the cognitive processes through play and drawing.[13] The new interpretation of drawing, the origins of which can be traced to the first public drawing schools at the end of the 18th century, became established in Europe around the mid 19th century. The specialist craft schools and the first applied-art schools first emerged in response to the needs of the local economies and at the initiative of local industrialists. Later, they were coordinated under state supervision – in the Bohemian Lands in the *k. k.* monarchy from the 1870s on. At that time, an orderly system of training in drawing, with clear instructions and manuals, had to be established. '*The year 1873 was particularly important for drawing in Austria in that the subject was then established in schools. At the same time, order was introduced into the teaching of this subject; the arbitrariness that a teacher could get away with until then in his classes yielded to a detailed programme. As is well known, in that year, at the instigation of the ministry, a special commission was established under the chairmanship of the court councillor, Rudolf Eitelberger, the founder of Austrian applied arts of the new era. The commission was charged with setting out the principles according to which drawing was to be taught henceforth. The preparation of the curriculum according to this programme was entrusted to Professor Anděl*,' wrote Alois Studnička, the Czech pioneer of the applied



2/ *Elementary composition*
Reproduction: Eugène Grasset, Méthode de composition ornementale, Paris 1905

arts and new drawing methods.[14] At that time, Anton Anděl developed the basic components of instruction in ornamental form (*Ornamentale Formenlehre*). This concentrated on the drawing of elementary, geometrical figures (*Elementare Freihandzeichnen*) [1], and on the construction of basic figures (*Grundformen*). The second part focused on the copying of historical ornament and, in the last phase, the stylisation of plants.[15]

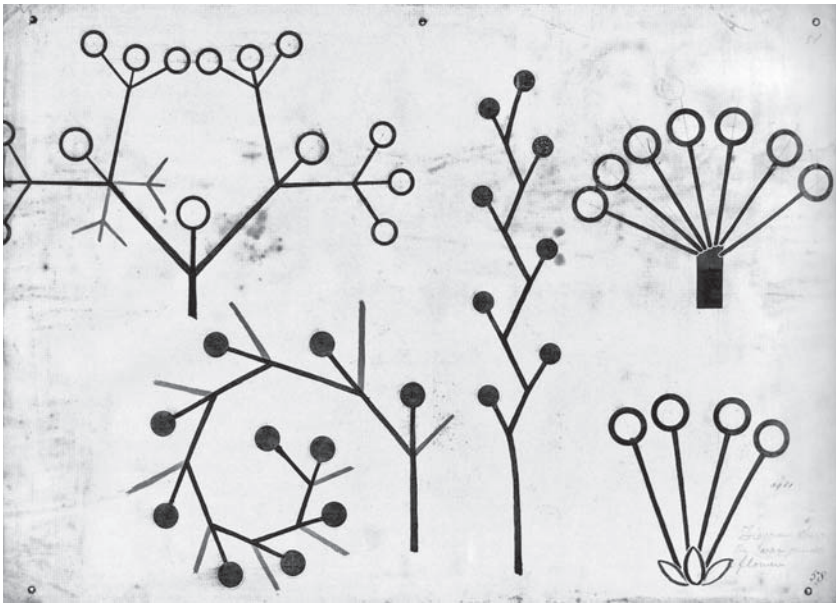
3/ ***Marie Teinitzerová, Stylised flower, schoolwork from the Academy of Applied Arts in Prague***
1905
Jindřichův Hradec Museum
Photo: Jindřichův Hradec Museum

For craftsmen in many fields, as well as for artistic decorators and industrial designers, drawing (design, *dessin*,[16] *Zeichnung*, *disegno*) was a kind of synthesising, conceptual discipline. It was supposed to connect the mind to the eye and the hand.[17] The intellectual concept had priority over the subsequent manual implementation. A proper drawing was supposed to be a clear expression of the ordering and prioritising abilities of the mind. Anděl, a school administrator and feared provincial inspector of drawing, asserted that drawing was '*a figurative language* [...] *an instrument facilitating conscious observation, the refinement of taste and the sense of form and measurement*'.[18] Drawing was supposed to cultivate psychophysical proficiency and balance. Unlike imitative drawing and academic, graphic representation, the three pillars of utilitarian instruction in drawing were developed and analysed by a team of professional teachers:[19] 1. the concision and clarity of linear drawing, the elementary 'lineaments';[20] 2. the rigour of technical drawing and geometry and the most difficult and complex level of drawing; 3. the composition of ornamental patterns.

Later, drawing from memory became a separate discipline. It was supposed to enhance one's intellectual abilities and consequently also one's appreciation of formal synthesis, which was useful for techniques of stylisation. Drawing from memory not only strengthened memory, but also the ability to imagine. The first phase of the school curricula gave pride of place not to original style, but rather to universality, linear diagrams, simplification, analytical strategies and subordination to function. Drawing and ornament were understood primarily as an intellectual, 'ideoplastic' endeavour.[21] The creation of simple, visual and ornamental figures and schemes required training in the linear definition of outline and in the clear placement of a flat silhouette against a backdrop; that is, training in what was visually and cognitively apposite.[22]

Grasset's educational handbook from 1905, *Méthode de composition ornementale*, which was used widely in Europe, encouraged the training in and creation of elementary compositions and conceptual graphism. Grasset considered the reduction of form to basic elements, and the configuration of basic geometrical shapes to be excellent assignments in geometrical drawing. [2]

These drawing methods, which became part of the teaching drill at the end of the 19th century, created and, through mass application in the networks of centralised education, progressively codified a basic, universally comprehensible, succinct, symbolic, visual language and pictorial conventions.[23] In 1926, Josef Vydra, who had modernist inclinations, wrote, in an article for the journal *Výtvarné snahy* (Artistic endeavours), that '*the aim of the new outline drawing, based on* [...] *precision,* [and] *constructiveness is* [...] *to find a new means of expression that is as simple and quick as the written word.*'[24] The reformative drawing at the end of the 19th century, with its pronounced tendency towards abstract stylisation, was ideogrammatic and symbolic in form. To a great extent, it created the precondition for the emergence of the semantic system, which, at the end of the 1920s, the Austrian philosopher and social scientist Otto von Neurath called the 'Isotype'.[25] Neurath hoped to establish a grammar of modern visual communication through a method of reduction of form. He was convinced that, '*the pictorial language – Isotype – as an international, universal, auxiliary language, constitutes an encyclopaedia of general forms and communication independent of space and time. The creation of this kind of communication standard is a necessity required by modern lifestyle.*'[26] Vassily Kandinsky also tried to create a similar, ordered visual



4/ *John Lindley, Botanical diagram*
1854–1855
V & A Museum London
Photo: V & A Museum London

system with structural rules, which would provide a grammatical alternative to verbal syntax.[27] In doing so, he harked back to numerous ornamental grammars that were used in the teaching of applied drawing.[28] Formal concision and artistic essentialism were likewise the main aims of the representative of neo-plasticism, Theo van Doesburg. He tried to come up with reduced visual units, basic signs that were meant to be combined in a pictorial alphabet.[29]

The ornamental theory of form that concentrated on the elementarism of lines and surfaces, and the requirement of visual precision and lucidity in linear schemes laid the foundations for modern design, and facilitated the wider acceptance and comprehensibility of formal abstraction. Thus, paradoxically, the teaching of applied drawing, with its focus on the composition of decoration, fundamentally contributed to the cultivation of a taste for austerity and the naked purity of basic shapes.

The Minimum Image. Nature, the Scientific Diagram and Ornament. Stylisation, the Constructive Principle, and the Abstraction of a Phenomenon

In the 1890s, the young – and later famous – textile designer Marie Teinitzerová[30] sent her homework from Vysočina to be corrected by her drawing teacher in Brno.[31] According to the pedagogical practices of that time, she was supposed to concentrate on nature drawings – the drawing of flowers and the ornamental stylisation of the natural world. Her teacher added a correction in pencil to one realistic watercolour drawing of flowers: '*stronger, stylised outline needed* [...] *follow the structure in the inner arrangement of the flowers according to geometrical principles. Here they are circles above a common centre and only outlines*.' The Brno teacher instructed the young, aspiring student of applied arts in line with the drawing trend that was widespread at the end of the 19th century, focusing on the abstraction of the perceived object and the geometrical stylisation of nature. [3] How did these stylising approaches infiltrate the drawing practice of applied-art education? How was the universal requirement of ornamental stylisation understood in its time? Can stylisation be regarded as a kind of image-making that aims at the abstraction and standardisation of the visible? Does it thus resemble, in its nature, diagrammatic representation in science? Is there a historical justification for making this connection between scientific visualisation and ornament?

As early as the mid 19th century, the founders of the first model School of Design at the Kensington Museum in London argued that neither the designer nor the creator of decorative patterns should copy the pictorial aspect of the products of nature, but rather should try to identify their general structure and conventional abstraction.[32] Decorators made extensive use of contemporary botanical illustrations and diagrammatic scientific representations.[33] [4] At the first trade schools, botany and the natural sciences were regarded as applied disciplines. The process of representing the natural world was supposed to aim at a generalisation of the visible, a study of the fundamental, structural features of a plant or organism. The strokes of the decorative lines and the basic compositional arrangement of the ornament were supposed to trace the basic lines of growth and the symmetry of the products of nature. Initially, Goethe's writings on the philosophy of nature, which concerned the morphology and metamorphosis of plants, had a strong influence on the theory and practice of organic ornament and methods of stylisation. The German natural sciences investigated the elementary, formal principle of nature (*Gestaltungsprinzip*), the unifying idea (*Grundidee*), and tried to find a general prototype of the formal configuration of all plants in the form of an abstract ur-plant (*Urpflanze*).[34] From the beginning, the English theory of ornament and the practical teaching of decorative art, mediated by the decorator and botanist Christopher Dresser, relied directly on these works of natural philosophy.[35] Proper ornament was supposed to be an ideal expression of the vital power of the plant (*Lebenskraft*),[36] an

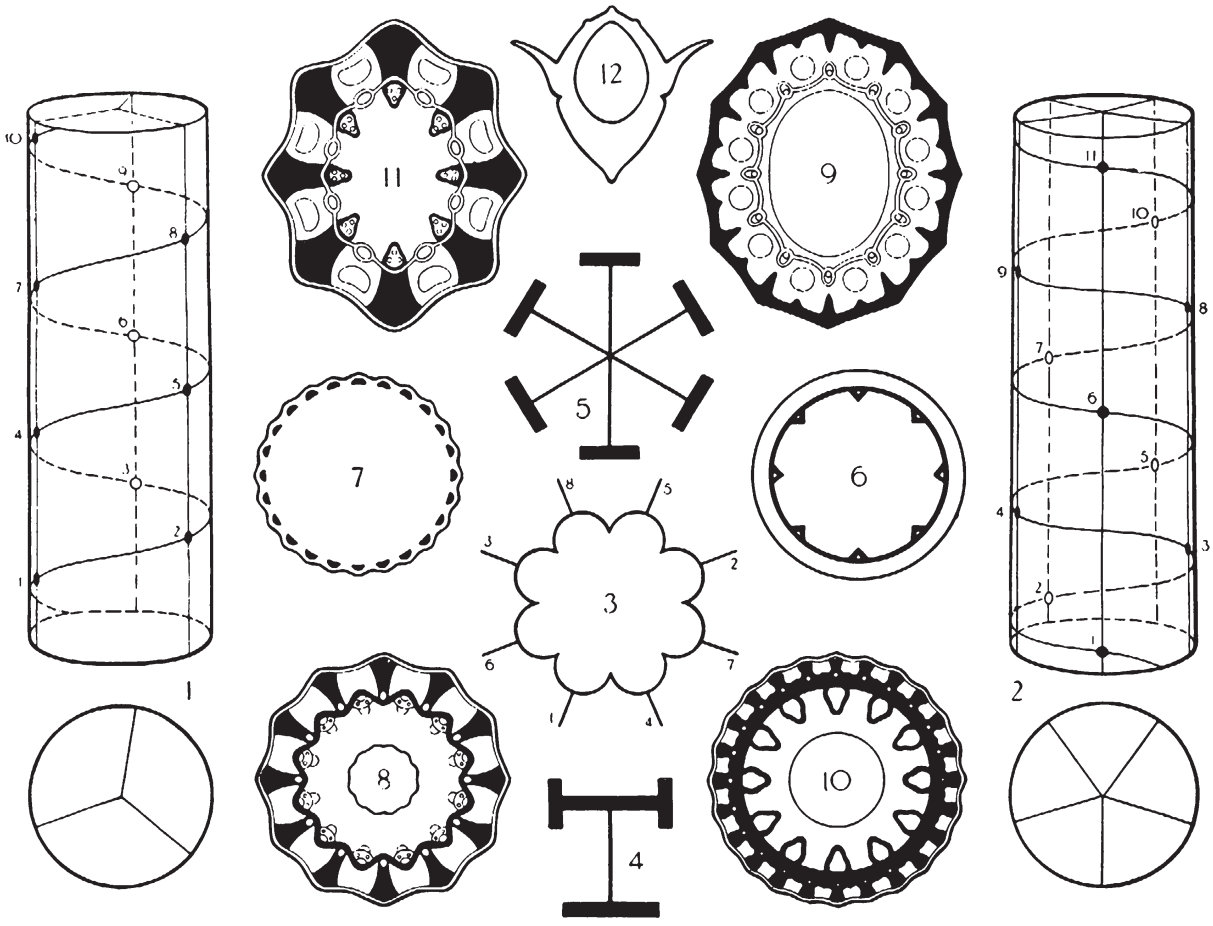
abstract representation of the action of the dynamic, vegetative forces of the vertical and the spiral.

The methods of the basic, formal analysis of plants, similar to botanical organography, were manifest in one of the colour chromolithographic plates in the essential handbook for the teaching of ornament, *The Grammar of Ornament*, from 1853, by the Englishman Owen Jones.[37] Jones too was convinced that true ornament should not imitate the random forms of nature. The designer should identify the general conventions and dominant forms of the natural world and transform them into a diagrammatic, geometrical figure.[38]

From the introduction of centralised school curricula in the Habsburg monarchy, that is, from the 1870s on, instruction in ornamental drawing focused on copying historical ornament from decorative patterns. This is evident from the numerous school drawings preserved in the archives of the applied-art schools and in the collections of local museums.[39] In the 1890s, however, even in the Bohemian Lands, there was a prevailing belief that the 'soulless copying' of patterns was useless, that it did not foster individuality. Several influential teachers revolted against the imitation of the models of the past. They wanted to turn their attention to living nature, to drawing according to reality and to memory training. This protest was, with slight temporal deviations, supranational and widespread. Educational reform in the 1890s essentially involved the rejection of imitation and the eclecticism of historical (classical, Renaissance) models, and support for the direct observation of nature. Drawing instruction at schools consisted primarily of the artistic and intellectual elaboration – the analytical stylisation and creative 'interpretation' – of natural motifs.[40] Thanks to scientific discoveries and instruments of visualisation such as the microscope, the number of available natural motifs had expanded considerably. In the 1890s the return to such motifs was regarded as a fundamental modernisation and regeneration of the field of applied arts. At the turn of the century, the analysis and stylisation of the products of nature constituted the essence of modern ornament.[41]

In 1906, the *Ottův slovník naučný* (Otto's encyclopaedia) defined stylisation thus: '*in drawing and painting it involves the rejection of all that is random in the shape and colour of the products of nature (for example, a leaf, a flower), and the presentation of these products*

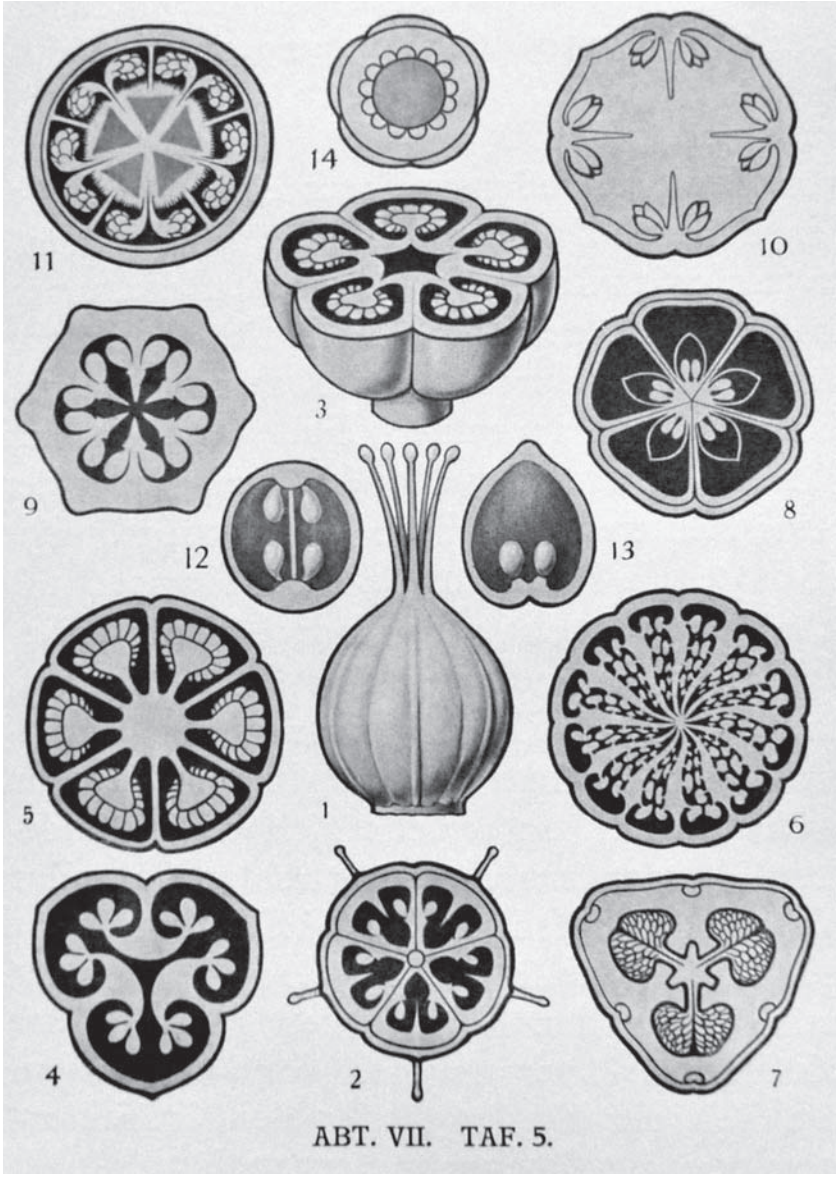
5/ *Diagrams of cross-sections of plants and the principles of growth*
Reproduction: Moritz Meurer, Vergleichende Formenlehre des Ornamentes und der Pflanze. Mit besondere Berücksichtung der Entwickelungsgeschichte der architektonischen Kunstformen, Dresden 1909



as basic, typical forms governed by a kind of convention or regularity.'[42] The aesthetician Otakar Zich regarded stylisation as a type of visual representation that was at the opposite extreme of illusionism. '*We usually understand stylisation in art as the transformation of natural forms into geometrical forms* [...] *We replace the natural form, which is limited by complex and irregular organic lines and surfaces, with artificial forms that have geometrical, simple and strictly regular lines and surfaces*.'[43]

The 1899 exhibition of English art and applied-art schools at the Rudolfinum in Prague demonstrated, in a clear and concrete manner, how the analytical stylisation of plants could be taught. One finds this comment in the contemporary journal *Dílo* (Oeuvre): '*The sensibly balanced collection perfectly illuminated the meaning and importance of the analysis of organic forms* [...] *likewise it demonstrated the richness and diversity of their practical application. The Academy of Applied Arts was the first in the Bohemian Lands to appreciate the significance of the studies on display; it then intensively promoted this new trend, which was entirely based on the analytical study of organic phenomena*.'[44] Karel V. Mašek, the head of the studio of ornamental drawing and painting at the Academy of Applied Arts, understood the stylisation of the products of nature as the transcription of *'form understood analytically, as the essence of the phenomenon*'.[45]

A large number of guides for the stylisation of nature were available in applied-art libraries in the Bohemian Lands. The most popular of these included the first manuals of plant stylisation and albums of ornamental patterns by the following authors: Alois Studnička,[46] Anton Anděl,[47] Moritz Meurer,[48] Anton Seder,[49] Maurice-Pillard Verneuil,[50] Alois Bouda,[51] Thomas Weigner,[52] Eugène Grasset,[53] as well as many others. Gustav Pazaurek, the director of the North Bohemian museum in Liberec (Reichenberg) wrote enthusiastically about this purgative wave of new modern forms: '*Seit der von Owen Jones* [...] *hat die liebevolle Beobachtung der Natur die grosten Fortschritte gemacht: den imposanten wissenschaftlichen Werken der Botanik sind vornehme, künstlerisch redigierte pflanzepublikationen gefolgt, von Seder Die Pflanze angefangen bis zu*



6 / *Diagrams and cross-sections of fruit*
Reproduction: Moritz Meurer, Vergleichende Formenlehre des Ornamentes und der Pflanze. Mit besondere Berücksichtigung der Entwickelungsgeschichte der architektonischen Kunstformen, Dresden 1909

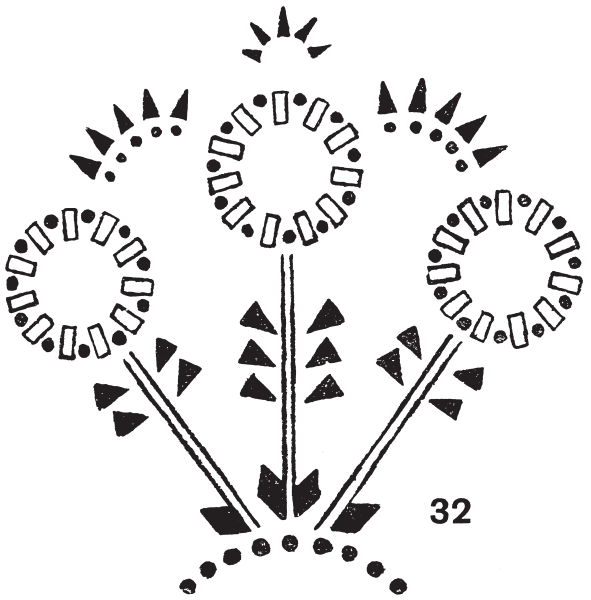
7/ Preparatory photographic material for analytical stylisation
Reproduction: Maurice Pillard Verneuil (ed.), Encyclopédie artistique et documentaire de la plante, Paris 1904–1908

Meurer oder Grasset. Walter Crane hat dem Pflanzenleben die entzuckendsten Gedanken abgelaucht, primäre dekorative Talente, wie Christiansen oder Eckmannm bereichern das Gebiet der Blumenstilisierung [...]. *Immer neue und neue Motive aus der Botanik werden der dekorativen Künsten zugeführt*.'[54] Pazaurek believed that the connection between botany and art would expand the range of colour and form, and revive ornament and artistic style.

The albums of Moritz Meurer, which were in accordance with Goethe's philosophy of nature, circulated in the Bohemian Lands. They offered comparative ornamental studies of plants. [5–6] Meurer investigated the architecture, the fixed, structural principles of plants. He was one of the first teachers to promote direct study of nature. As a decorator, he was interested in the morphology and anatomy of plants. He examined the systems and tectonics of bifurcation, patterns of inflorescence, cross-sections of stems and fruit. He was convinced that the structural logic of nature and the developmental laws of growth should be incorporated into the compositional arrangement of ornament and the practical crafts. One could derive the basic, geometrical order of primary forms from the morphology of nature.[55] Transcriptions of the functional structure of plants were analysed in the context of Meurer's comparative teaching of form (*Vergleichende Formenlehre*).[56]

The biological theory of ornament in the late 19th century can be understood as a suggestion, a forerunner of functionalism; that is, of a close and existentially conditioned union of natural form and function. One has to be very precise, however, when speaking of the proto-functionalism of ornamental forms. Meurer, like Sullivan a few years later, understood the functional logic of plants not as a rational apparatus, which could be freely transformed and applied for various ends, but rather as the sole, ideal, true '*functional and regular arrangement pre-established by the supra-human designer*'.[57] (Sullivan came up with the famous modernist slogan 'form follows function'.) In Meurer's case, one can also clearly see how his belief in nature philosophy was strengthened at the turn of the century under the influence of the metaphysics of Rudolf Steiner's anthroposophy. According to the latter, art, like science, should move beyond the senses to an understanding of ideal principles.

Maurice Pillard Verneuil, who collaborated closely with Grasset and Alfons Mucha, proposed various orna-



8/ ***Stylisation of a dandelion***
Reproduction: Eugène Grasset, Méthode de composition ornementale, Paris 1905

mental interpretations in connection with scientific diagrams and botanical organography. In the Bohemian Lands, it was the famous Grasset who formulated the most important path to graphic abstraction. He looked at ornamental abstraction in light of the function of the brain and memory. He outlined his theory in the introduction to his book *La Composition ornementale*.[58] According to him, the brain registered and understood the formal diversity of natural phenomena in a schematic, simplified, organised manner. [7, 8, 9] When creating ornamental compositions, he adopted this 'cerebral' method of deriving or deducing the perceived object. In his theory of ornament, Grasset sought a kind of invariable, formal principle – elementary, abstract figures derived from the visible world that were the constitutive pillars of imagery processed by the brain. This reduced, ornamental vocabulary yielded a list of several basic '*minimum images*', which had a simple, but perceptually significant form.[59] Grasset supported unequivocally – although still within the framework of decorativism – the path that led to the radical abstraction of the perceived object. He regarded naturalistic ornament, by contrast, as '*boring and repulsive*'. Grasset's abstract ornament consisted of basic features; it was a minimalist, concise composition of lines and points, very close to the visual system of new Dutch neo-plasticism and Kandinsky's theory of composition from the 1920s.[60]

In 1912, the Czech Josef Jaroslav Filipi, who taught at weaving schools, published a handbook on flat ornament that was used extensively.[61] In this book, he compiled in a very comprehensible manner Meurer's stylisation of plants, Grasset's ornamental abstraction, and the modern, analytical ornament of the Prague Academy of Applied Arts, where he had studied. Filipi '*wanted to awaken an appreciation of simple and purposeful decorative forms*'. In his hands, the analytical stylisation of nature by means of artistic derivation evolved into geometrical abstraction. He stylised the visible image progressively; in successive stages, he standardised the image, carefully testing its legibility. '*In this way, we proceeded from nature to ornament, from forms that were complex and close to nature, to forms that were simple and removed from nature, until we arrived at the geometrical component – the absolute ornament.*'[62] [10] He urged all designers of flat ornament to stylise colour as well as form. According to Filipi, the 'absolute', stylised form of a flower, rendered as a minimalist circle with a central point, should have a correspondingly absolute, primary colour (red, blue or yellow).

Designers of flat patterns had the freest approach to ornament. In textile designs one often saw micro- and macroscopic inventions by conventional decorative designers. For many decorators and artists, the microscopic figures of nature constituted a transitional phase between stylisation and free, fanciful creations. Up until then, the view seen through the microscope had no point of support in the visible world, but science legitimised this kind of visualisation. In 1910, Filipi regarded the microstructures of nature as 'abstract ornament': '[I] *find motifs for* [my] *compositions in the segments of plants or an insect* [...] *the colourful spots on the wings of butterflies, the wing-cases of beetles, the furrows and spots on bark, the drawings on the surface of gourds, seashells, fish scales, the structure of pine cones.*'[63] [11] Emanuel Pelant, a teacher from Valašské Meziříčí, had a similarly open approach to ornament. He offered his students diverse motifs for decorative stylisation, '*from the most insignificant infusorian and microbe that we see only under the microscope* [...] *to new and unprecedented ornaments from seaweed and polyps or various seashells and other aquatic creatures.*'[64] He believed that, '*Whoever looks on nature with open eyes will find in it thousands of patterns, and by combining them can create countless ornaments*'.[65] Thomas Weigner, from the weaving school in Varnsdorf (Warnsdorf), developed this newly discovered range in a number of ornamental plates depicting the figures of butterfly wings, insects, moss and other elements of the natural world.[66] [12, 13]

Henceforth, however, the decorators' attempt to explore invisible, microscopic figures with the human eye was connected with the attempt to understand the formal essence of phenomena. Even in close-up views of the most repellent, slimy seaweed, decorators, like scientists, found a symmetrical order and a constructive, functional principle, a universal unity in diversity.[67]

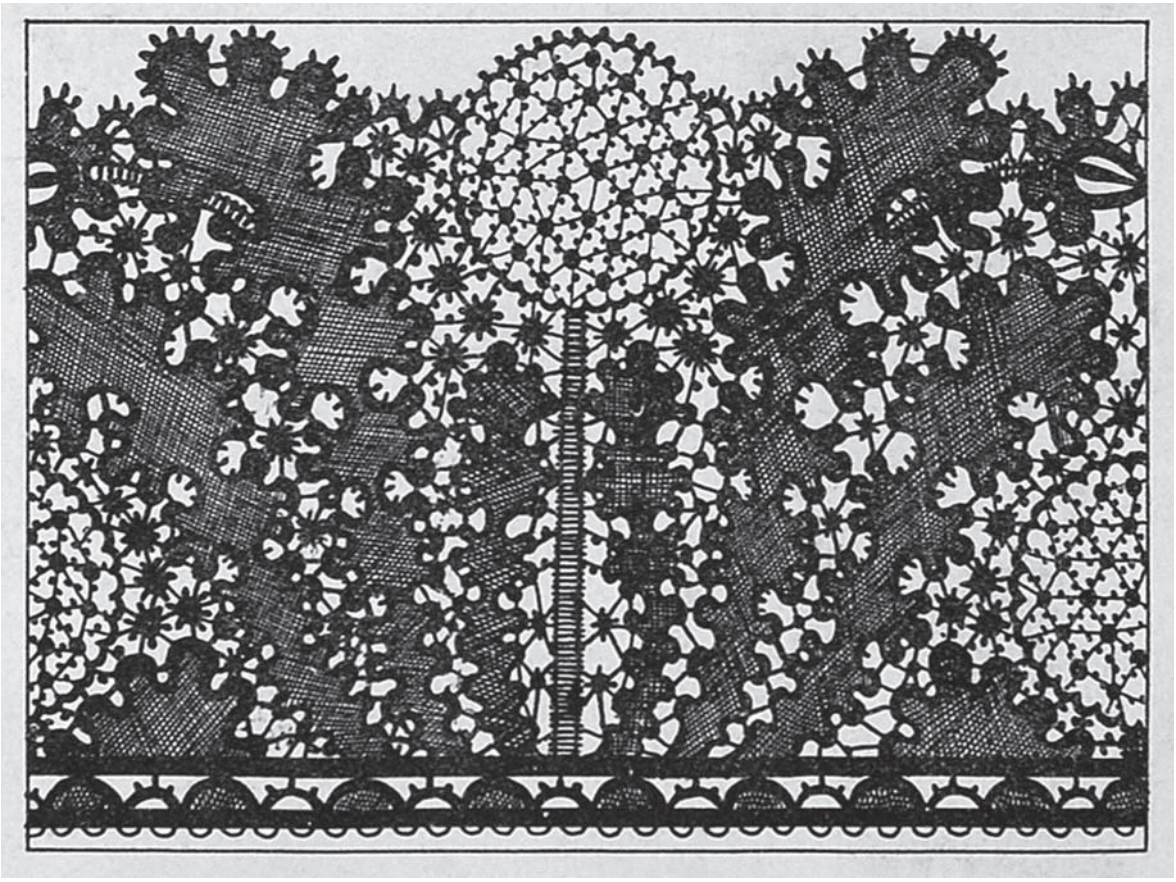
Inner Sight, Memory Image and Imagination. Free Ornament and the 'New Language'

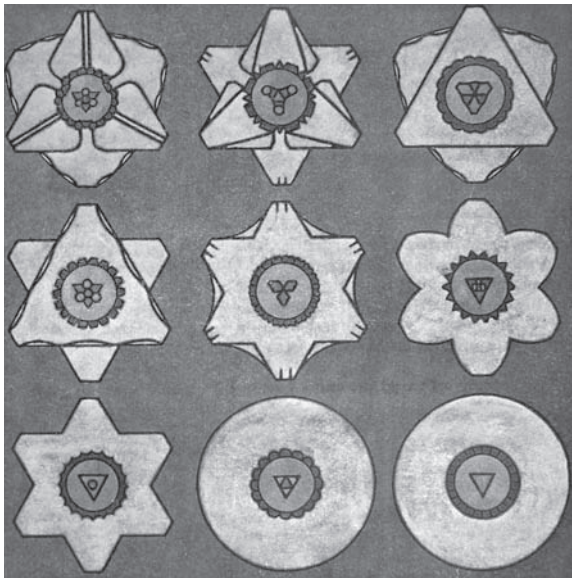
Naturally, ornament was not supposed to be a mere logical, minimalist derivative of the visible world of nature, as one might infer from the methods of gradual, analytical reduction. In addition to this rational trend of decorative drawing focused on constructive

principles, ornament was also supposed to reflect the darker, irrational depths of creativity connected with a distinctly individual 'inner sight'. John Ruskin, whose Czech apologists were F. X. Šalda and F. X. Jiřík, was opposed to routine stylisation and 'stitching leaves together by the tips'.[68] According to Ruskin, the idea of the stylisation of nature into geometrical figures produced 'conventional uniformity'; for him, it was an image of nature violated by the machine.[69] Ruskin was just as critical of the influence of scientific rationality, conceptual pedantry, or any kind of manifestation of the 'lunatic spirit of the system' in the artistic sphere.[70] While the scholar, in Ruskin's view, made use of intellectual reflections and logic, the artist should draw exclusively on personal perceptions, emotions and memory. Ruskin and Walter Crane were afraid that pragmatic instruction in drawing would produce a sterile, impersonal, visual system. Under their powerful influence, a free, non-directive and personal creativity came to be cultivated in the teaching of ornamental drawing. This latter instruction in ornament did not focus on any kind of objective, 'cerebral', reduced vocabulary, or on a clearly fixed architecture of form. On the contrary, it drew on the expressivity of the artist, on his or her memory images, associations and psychological disposition. At the turn of the 19th and 20th centuries, instruction in ornamental drawing came to include the investigation of memory, work with internal images and the imagination.

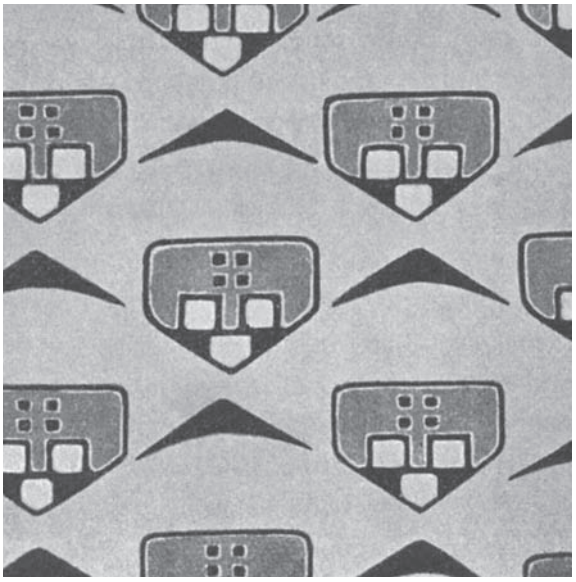
The call to enhance memory by means of drawing (and, vice versa, to enrich drawing with memory images) was heard more frequently at the end of the 19th century, in the Czech context as well. At the trade schools, templates and copying were criticised because they led to a passive dependence on a model. Memory drawing (*Gedächtniszeichnen*) offered a clear alternative to these directive methods of drawing. 'Drawing from memory' and the recording of remembered internal images were supposed to strengthen the active powers of observation, the free, pictorial imagination and the combining mechanisms of the brain. In England, this '*sketching from the memory, mind picturing*' was included in the teaching of design from the mid 19th century on.[71] In the Bohemian Lands, as far as I know, this mnemonics of drawing was not a subject of instruction until the 1890s, when it was introduced under the influence of contemporary English and American art education. Key didactic texts (Liberty Tadd,[72] John. S. Clark[73]) and later also international exhibitions and conferences on drawing provided information about such trends. The memory drawing of the Czech-born Franz Čížek was well-known; he began to use the technique in the first decade of the 20th century in nearby Vienna. The aim of this instruction was to record the memory outline, the cognitively processed mental trace, and to develop it with currents of free associations. There was no attempt to depict images that were as faithful as possible to the original objects, but rather to capture powerful, mental-emotional imag-

9/ *Stylised dandelion applied in lace*
Reproduction: Eugène Grasset, La Plante et ses applications ornementales, Paris 1896





10/ ***Absolute plant stylisation***
Reproduction: Josef Jaroslav Filipi, Plošná stylisace dle přírody (Flat stylisation in accordance with nature), Praha 1912



11/ ***Josef Jaroslav Filipi, Abstract ornament – stylised corn***
Reproduction: Náš směr (Our direction) I, 1910

es. The time gap between seeing and thinking, and the function of memory selection were important in clarifying the fundamental features of a thing. At the same time, memories, associations and, to a significant extent, chance and the mood of the artist, blended with the image seen. In Birmingham, a method of drawing with closed eyes was even developed, known as 'shut-eye drawing'.[74] The student was supposed to draw the outline of a memory image with closed eyes; later, he could sketch it in with his eyes open.

Concentrated study of memory and mental imagery facilitated the visualisation of abstract concepts and internal images. Filipi, the Czech teacher of applied drawing, was aware that his German colleagues from the Munich Kunstgewerbeschule, Hermann Obrist and Wilhelm von Debschitz, wanted '*to express various concepts through abstract ornament, such as centrifugal motion, pendulousness, tension, etc.*'[75]

'Free ornament' was supposed to draw on this area of images processed by memory and filled out by the imagination. Visual conventions were completely destroyed in the field of free ornament (*Freie Ornament, Phantasie Ornament*) as it was thus defined; memory and imagination opened up a new realm of possibilities. Ornamental practices thus provided an intensive breeding ground for independent experiments and personal, artistic, imaginative creations. In 1904, an anonymous author, writing for the German journal *Deutsche Kunst und Dekoration*,[76] stated that for some time, in addition to the more intensive study of nature, there had also been a new trend in ornamental practices. This trend could not yet be labelled abstract; rather, it involved '*free ornamental motifs that do not refer to any tangible prototypes of reality*'.[77] In his view, one could find such prototypes of pure, abstract ornament, such inspiring stimuli, in microscopic figures, in the movement and random figures of clouds in the sky, in melting snow, a crumbling wall, the mechanical records of motion. According to the author of the article, ornamental art thus touched on '*the mystical in artistic music*' and the true '*inner sight*' (*Innere Schauen*).[78] The author regarded this stance as innovative and, raising the prophetic question 'what will it produce?', he stated that he first encountered the form of free, imaginative ornament in the work of the young German student from Prague, Katharine Schäffner.

Although she may have tapped into the breeding ground of free abstraction, which Kandinsky later developed in the field of abstract expressionism, although in her time she had powerful supporters who tried to come to grips with her work conceptually, little is known about this young artist. Schäffner was apparently enrolled at the German art school for girls in Prague (Deutsche Kunst-Übungstätte), the director of which was the Czech-German painter Hermine Laukota. Later, Schäffner probably departed for Munich, where she found an advocate in Ferdinand Avenarius, an important representative of the cultural reform movement. In 1908, Avenarius published in Munich a separate album of forty-two drawings by Schäffner entitled *Eine Neue Sprache?*.[79] [14–15] As far as Avenarius was concerned, the compositions represented a new, free, visual art (*Freie Augenkunst*), which did not depend on function, nor did it imitate reality. Rather, it mediated a spiritual message using qualities of colour and light. According to Avenarius, Schäffner's drawing was not an ornamental, decorative medium, which he understood as a visual art tied to function – *gebundene Augenkunst*. Rather, it was free artwork, entirely liberated from decorative function (*Freie Kunstwerke*). In his view, the importance of this

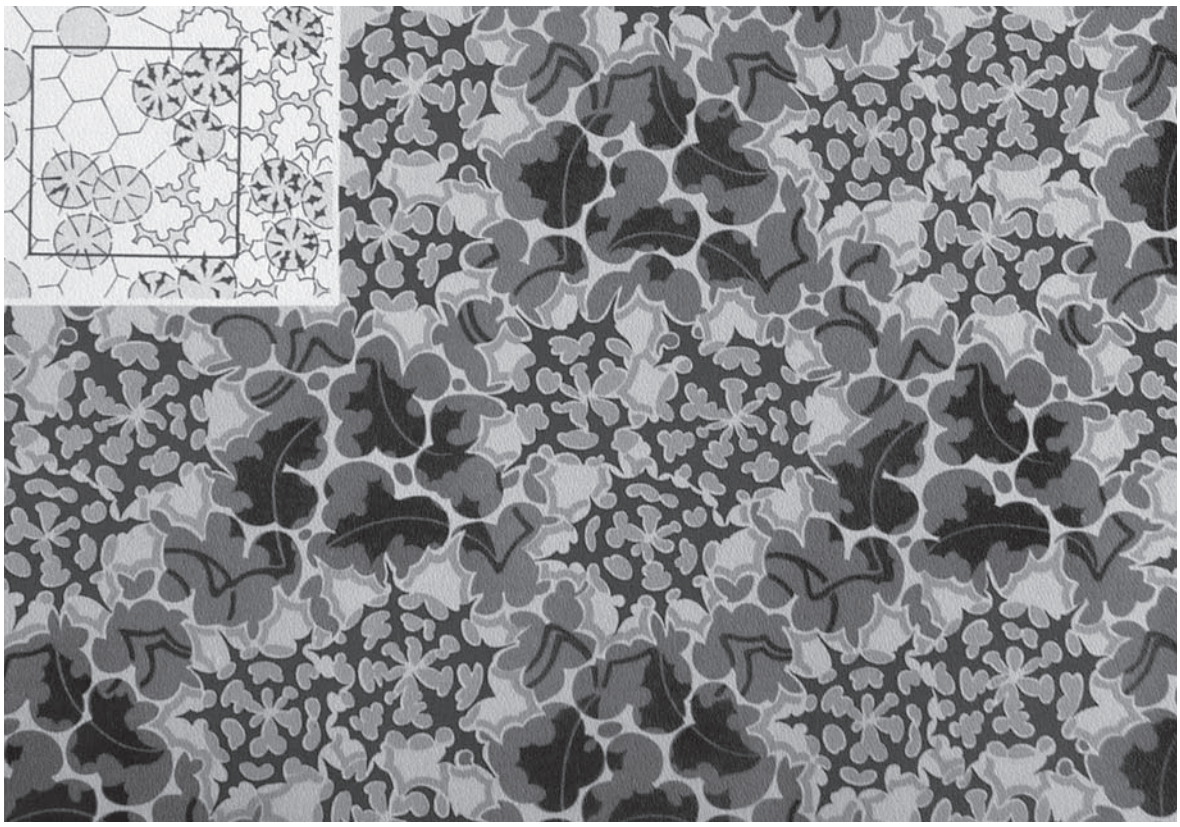
'new artistic language' lay in its potential to transform reality freely and to present in art a complete imprint of a spiritual state and inner life.

In the case of Schäffner's abstract compositions, we can clearly see that her work was made and originally categorised as imaginative, free ornament. Later, it was detached from decorative function and presented as part of a new artistic language. The transformation of the discursive framework, of the context and the status of the picture (ornament as a dependent aesthetic form versus independent artwork), should not establish an impermeable border that obstructs our understanding of the genesis of certain art forms.

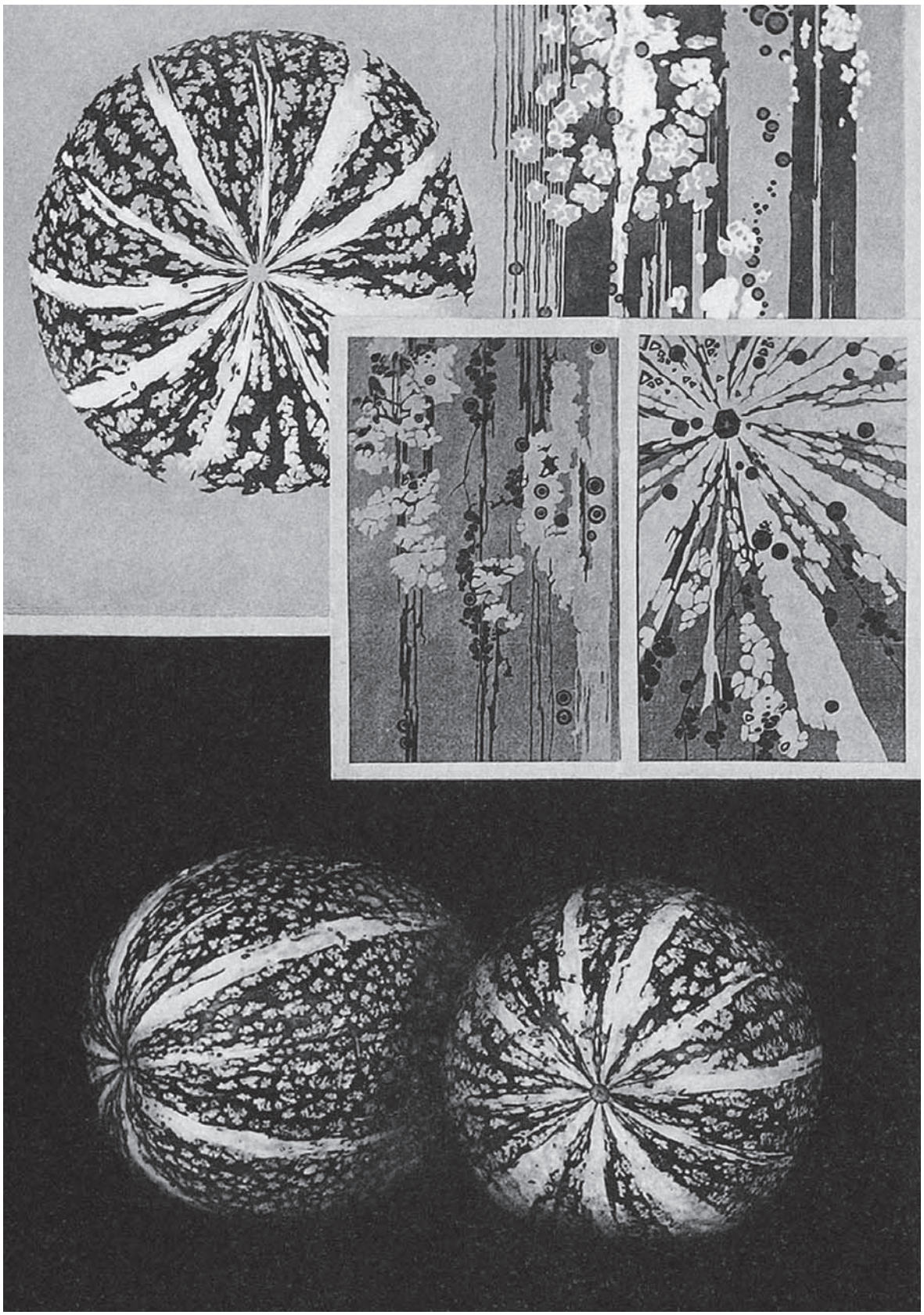
In 1934, in his work *Malířství ornamentální a obrazové* (Painting of ornament and pictures), František Kovárna pointed out that there were a number of prejudices against ornamental art, which made it impossible to look at artistic abstraction that originated in the context of decorative and of free art as an indivisible whole.[80] Rather than differences, Kovárna saw a profound similarity between the 'pictorial' and the 'ornamental' as 'ideoplastic' formations. He interpreted the opposition, which was perceived to exist between the two spheres, as an artificial construct, the origin of which should be investigated. In addition, he drew attention to the fact that the genesis of the theory of 'ideoplastic', abstract art was closely connected with the interpretation of ornament presented in the key works of Alois Riegl[81] and Wilhelm Worringer.[82] In 1934, Kovárna wrote: '*Instead of a difference, we have, on the contrary, here identified a connection, which was overlooked by the categorisation that relied on the object as the distinguishing criteria. The division of the artistic sphere into two disconnected parts and the isolation of the ornamental wing under the title of handicrafts or applied arts has obstructed our understanding of the dynamic relationship* [...] *The artistic sphere is here understood as a dynamic field governed by two poles, the ornamental and the pictorial, that is, as an indivisible whole.*' We need to understand the wedge that modernist ideology drove between ornamental art and free abstraction, and investigate the mechanisms of the subsequent historiographical manipulation, which placed these two poles in opposition to one another.

Ornament, Corporeality and the Notation of Movement. Kinaesthetic Perception

The Czech aesthetician and propagator of the applied arts Otakar Hostinský interpreted ornament as non-imitative art, along with music and dance.[83] He thus harked back to the influential English theorist of ornament Ralph Wornum, a close collaborator of Semper's, who compared the decorative figure to music.[84] The fact that decorative art was, in the late 19th century, classified in the same artistic category as music and dance had important consequences for the development of ornament, which was turning away from imitative illusionism and tending towards synaesthetic abstraction. Ornamental forms thus naturally took over themes connected with related, non-imitative



12/ *Microstructure – flat ornament*
Reproduction: Thomas Weigner, Naturstudien und Kompositionen, Varnsdorf 1906

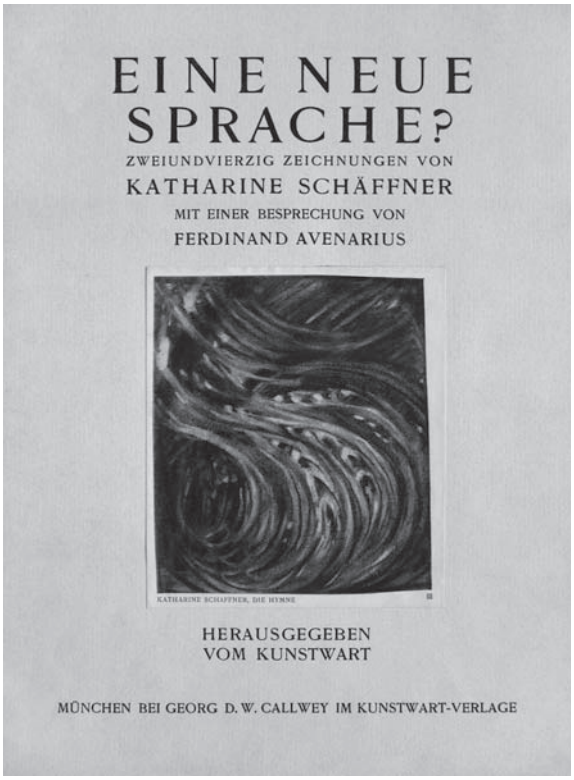


13/ ***Study of a melon***
Reproduction: Thomas Weigner, Studie a plošné vzory (Studies and flat patterns), Varnsdorf 1910

disciplines – temporality, movement, rhythm and corporeality.

In 1915, an outstanding teacher at the Prague Academy of Applied Arts, Václav Vilém Štech, published a selection of articles from the preceding decade under the title *O projevu výtvarnou formou* (On expression in art).[85] Many of the essays concerned ornament and the origin and role of decorative practices in the historical development of art. Štech described the ornamental figure in relation to the organisation of the body and the natural perception of movement. '*The first ornament arises* [...] *through an association with the expressive movement of the human body; the basic feature and essence* [of the first ornament] *is rhythm, which is manifest in abstract forms* [...] *Ornament, like decoration of the body, is really only a continuation of bodily movements, the expansion and enrichment of the body*.' Štech referred to the 1905 work *Grundbegriffe der Kunstwissenschaft*, by August Schmarsow, in which the German art historian tried, among other things, to analyse formal principles conceptually.[86] Schmarsow understood ornamental and musical compositions as analogous imprints of the organisation of the body and the basic function of the organism, as parallel to physiological rhythm and regular movement. According to Schmarsow, the actual structure of the body conditioned the form of creative expression. '*The three main laws of all human creation are derived from the overall organisation of the body: symmetry, proportionality, rhythm. The common activity of both hands and both eyes gives rise to symmetry, the formal principle of the dimension of breadth; the concept of the vertical axis of our body, as well as others such as the axis of growth, gives rise to the proportionality of consecutive parts, the formal principle of the first dimension; the execution of movement in connection with the first or the second or both gives rise to the formal principle of the third dimension, rhythm.*'[87] These theories were influenced by and at the same time actively influenced contemporary methods of ornamental drawing.

In the 1890s, the American teacher Liberty Tadd adopted a method of manual drills for the creation of ornament in schools.[88] The abovementioned school administrator Anton Anděl wanted to introduce Tadd's approach into the Czech educational system.[89] In his book *New Methods of Art Education*, Tadd described his positive experiences with ornamental, two-handed drawing, which he executed in chalk on a blackboard while standing. A copy of the book was available in the library of the Prague Academy of Applied Arts; the fact that its cover was well worn indicates that it passed through many hands. The American reformer was convinced that this kind of physical training in ornament would lead to a mental-physical balance and at the same time would strengthen the skill of both hands of the future artisans. According to him, the scale and shape of the ornamental patterns made in this way corresponded to the symmetry of disciplined yet spontaneous body movements. Ornament was the natural notation of movement, of kinaesthetic perception, and of the student's imagination. By these means Tadd hoped to develop a unity of thought and action. Ornament was thus a projection of a physiological gesture, an exteriorisation of a natural movement and thought, and a path to the synaesthetic formation of the individual.[90] [16]



14/ ***Ferdinand Avenarius, Eine Neue Sprache?, book cover***
Reproduction: 42 Zeichnungen von Katharine Schäffner, München 1908

The art historian, aesthetician and founder of gymnastics Miroslav Tyrš studied '*the moving sculpture of the body, the relation between bodily rhythm and musical rhythm*'. Tyrš understood figurative representation and '*the sign writing of ordered movement*' in terms of formations and segmented units.[91] It was no coincidence that his visual transcription of turns and movements on the training field, the transformations of columns of two into columns of four, his drawings of flowing and recurrent returns to the original postures, recall the composition of spiralling scrolls on paper. He based his aesthetics of exercise and rhythmical movement on the rules of the composition of ornament, which were '*congruity, clarity, articulation, symmetry and harmony*'. His ideal was proportional, functional and harmonious movement evoked by emotion.[92] Tyrš's interpreter and successor Otakar Zich proposed that this new field, which connected the spheres of musical art, corporeal mimicry and motion with fine art was the modern form of '*orchestral art*'.[93] Like ornament, gymnastics also evolved from a disciplined, geometrical form into the freer, sensuous forms of dance.[94] Dance, music and repeating decorative patterns had a common foundation in the rhythm and movement of the body. The theory that aesthetic emotion and perception were rooted

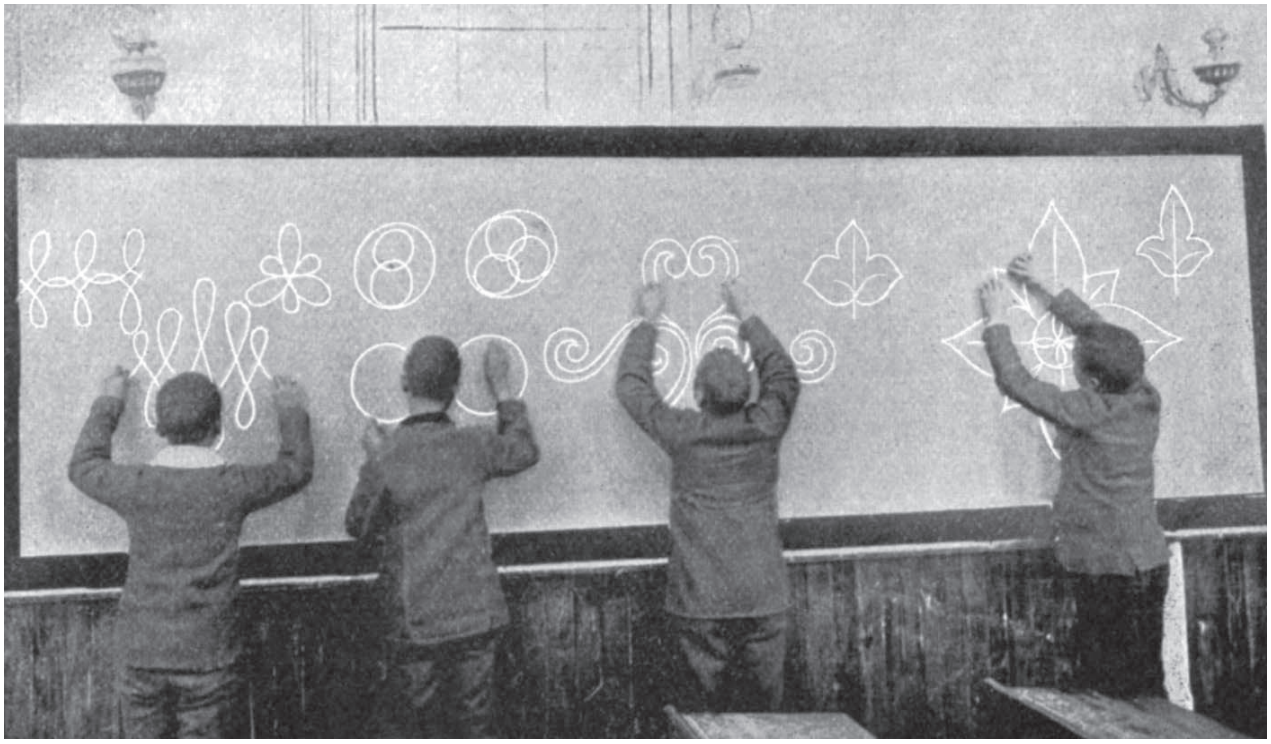
in corporeality, the motor functions of an organism and rhythmical movement also legitimised the interest that decorative artists and the early abstract artists had in movement. In this context, the linear, rhythmical line – the wavy line, or the arabesque – was understood as the expression of an authentic vitality, the unity of the physiological, animal pulsation and the mental, artistic transmission.[95]

Walter Crane addressed the question of the relation between movement and the line and ornamental figure. In his book *Line and Form*, he referred to Muybridge and Marey's chronophotographic records of movement. According to Crane, however, the artist should not capture motion after the manner of high-speed photography; that is, as a static account of a certain sequence of movements. On the contrary, the artist should try to find an artistic convention to express continuity of movement in a dynamic, formal figuration that suggested the idea of speed and motion.[96] As an illustration, Crane proposed rhythmical, wavy lines as records of movement, linear arabesques that copied the main lines of the gestural language of dance.[97]

Alfons Mucha was also interested in the dynamic potential of line and movement and the belief that one could connect a visual image, in the spirit of synaesthesia, with music and dance. In 1901, he designed abstract arabesques for the collection of ornamental patterns entitled *Combinaisons ornementales*. These could be multiplied into concentric figures with the aid of a kaleidoscope.[98] Arnauld Pierre[99] and Pascal Rousseau[100] interpreted Mucha's arabesques in the context of the work by Albert de Rochas from 1900, *Les Sentiments, la Musique et les Gestes*, for which Mucha designed the cover.[101] The work included reproductions of photographs of the gestures of the dancer Lina de Ferkel in a state of hypnosis intensified by music. The liveliness of the line was supposed to resonate with sound and the hypnotic movement of the dance. František Kupka was no stranger to the decorative context. In his abstract paintings, one sees an attempt to identify a linear gesture with movement, with motor intuition, with the sensitivity of the hands and memory images; one also sees an attempt to incorporate the passage of time.[102] [17]

In the Bohemian Lands, people were familiar with the popular patterns of the French designer Maurice Dufrêne (1876–1955).[103] They may also have heard of him in connection with his Parisian colleague Mucha,

15/ ***Katharine Schäffner, Passion (Leidenschaft)***
1908
Reproduction: Ferdinand Avenarius, Eine Neue Sprache?, 42 Zeichnungen von Katharine Schäffner, München 1908



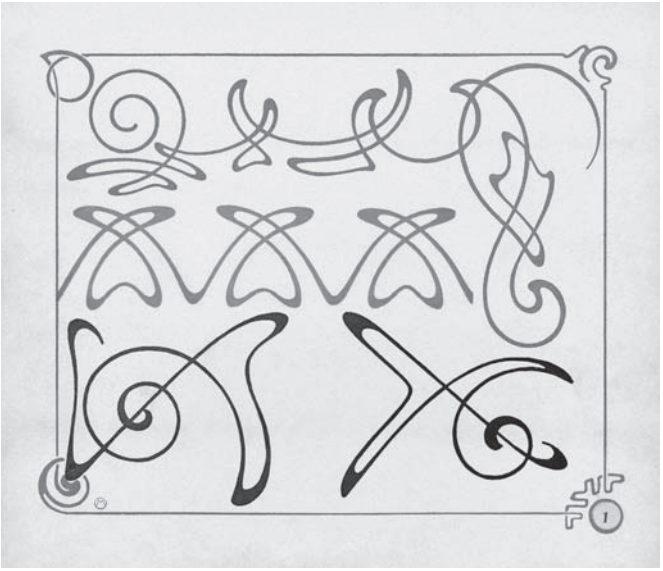
16 / *Two-handed ornamental drawing*
Reproduction: Liberty Tadd, New Methods of Art Education, New York 1899

or through the journal *Art et Décoration*. Dufrêne was interested in the ornamental stylisation of the movement of animals, in particular insects.[104] He designed vases, the outlines of which were based on study of the movement of frogs.[105] Likewise, Vojtěch Preissig designed an ornamental, stylised transcription of the flight of swallows for the cover and endpaper of *Volné směry* in 1899.[106] [18]

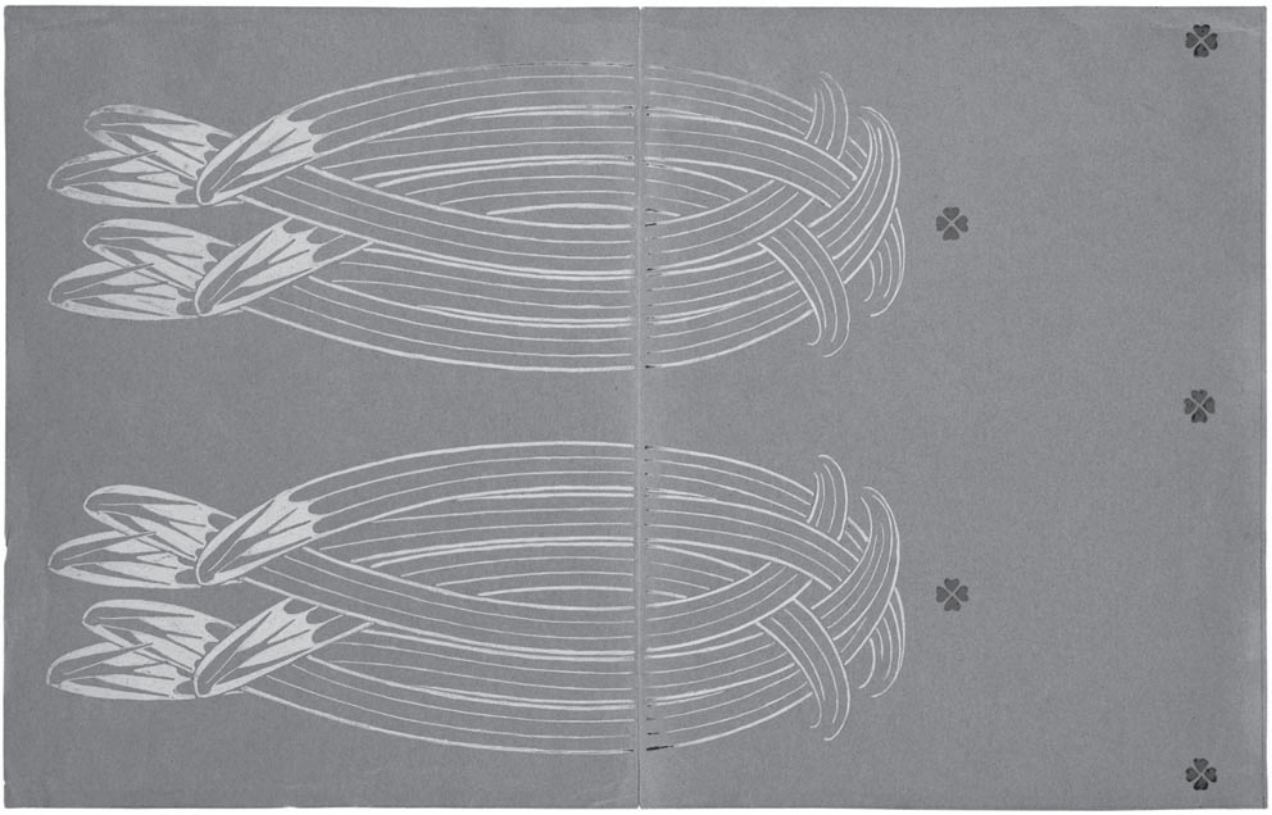
In this context, one should mention the reformer of instruction in drawing, Franz Čížek, born in Litoměřice. Right before World War One, in his Klasse für Ornamentale Formenlehre at the Vienna Academy of Applied Arts, he studied memory records of the flight of birds. The Czech teacher of drawing Emanuel Pelant attended Čížek's courses and wrote about this "*Gedächtniszeichnen*" in the journal *Náš směr* (Our direction) in 1911.[107] In 1935, when Čížek retired, the Czech press described his decorative version of avant-garde approaches thus: '*Čížek cultivated a kind of futurism – the so-called kineticism. Phases of movement were suggested in a flat manner in an image* [...] *This kineticism was and is the only abstract 'ism' in painting to be found in Vienna, the only one for which Vienna had the courage. Neither cubism nor imperial-German expressionism caught on there. Čížek is now leaving and with him goes a large part of the fame and repute of the Viennese Academy of Applied Arts abroad.*'[108]

Conclusion

The theme of the relation between ornamental theory and practice on the one hand, and avant-garde and modernist trends on the other, is complex, fascinating and rich in material. This essay follows on from the work of Gladys Fabre and Otto Hahn,[109] Willy Rotzler,[110] Markus Brüderlin,[111] Georges Roque[112] and many others who attempted to bridge the disparity, as it was



17 / *Alfons Mucha, Arabesque*
Reproduction: Georges Auriol – Maurice Pillard Verneuil – Alfons Mucha, Combinaisons ornementales, Paris 1901



18/ ***Vojtěch Preissig, Competition design for endpaper***
Reproduction: Volné směry (Free directions) IV, 1899–1900

traditionally perceived, between them. After extensive study in a number of European libraries and local school archives, I decided to arrange the material into thematic subchapters. By introducing half-forgotten or and previously unknown examples, I have tried to identify the key contribution and remarkable momentum that ornamental practices and the educational system of drawing at the end of the 19th century gave to the international, visual culture of modernism.

In 1924, the Czech journal *Náš směr* printed the outraged cries of advocates of reform in drawing instruction.[113] The modernist contributors outdid one another with their vociferous slogans in the spirit of Loos – '*Let's demobilise ornament! Ornament – Damn it! A curse on ornament!*'. As far as they were concerned, ornament was an anachronism, false gold. There were many reasons for this adamant aversion. But the autocratic, modernist principles that informed the ascendant, strictly technical, elementary design, construction and standardisation, were much indebted to the developmental processes and debates that had been waged for some time over ornamental stylisation and applied drawing. Likewise, non-imitative, ornamental drawing, which drew on memory images and the imagination, was completely open to experimentation and suggested the potential of various systems of visual representation: from the rational diagram to the transcription of tumultuous, internal events.

Translated by Kathleen Hayes

Notes

* This study is the outcome of the grant project 'Aspect and Abstraction: Connections between Pictorial Representation in Decorative Art and the Natural Sciences (1850–1914)', GA 408/08/1567.

1. I am aware that the terms 'ornament' and 'decoration' are not clearly defined in this text. Historically, there are differences between these terms. Ornament was understood as a single, stylised image that could be applied and arranged in repeating decorative patterns. In the specialist literature on the subject, however, in particular in English studies, these terms, along with the derived adjectives 'ornamental' and 'decorative', are used synonymously. See also: Bernd Evers – Rainald Franz, *Bestimmung und Entwicklung des Begriffs Ornament*, www. ornamentalprints.eu. Consulted 10 June 2010.

2. Josef Čapek, *Málo o mnohém* (A little about a lot), Praha 1924, p. 68. In the chapter on ornamental culture, Čapek wrote: '*the applied arts have given excessive attention to ornamental adornment*.'

3. Gottfried Semper, *Der Stil in den technischen und tektonischen Künsten*, Frankfurt am Main, 1860–1863.

4. Otakar Hostinský, *Gottfried Semper a umělecký průmysl* (Gottfried Semper and the applied arts), Praha 1904, p. 84.

5. Zdenko Schubert von Soldern, *Das Stilisieren der Pflanzen*, Zürich 1887. See also the study of Semper's follower: Jindřich Vybíral, Zdenko Schubert-Soldern: Dobře utajený talent (Zdenko Schubert-Soldern: A well-hidden talent), *Architekt* (Architect) XLIII, 1997, No. 20, p. 51-52. I would like to thank Jindřich Vybíral for lending me the texts.

6. Eugène Grasset, *Méthode de composition ornementale*, Paris 1905, p. 1. *'Le but de l'art ornemental est donc, comme son nom l'indique, d'orner les objets fabriqués, de nus qu'ils sont en construction pure, deviennent comme habillés pour le plaisir d'oeil'.*

7. Ernst Gombrich, *The Sense of Order, A Study in the Psychology of Decorative Art*, Oxford 1979, the chapter 'John Ruskin and Expressionism'.

8. Walter Crane, *The Bases of Design*, London 1898.

9. Walter Crane, *Die Grundlagen der Zeichnung*, Leipzig 1901. *Volné směry* (Free directions, III, 1899, p. 170) carried a notice about the publication of Crane's '*practical and comprehensible work*' *The Bases of Design*. Crane's essays were also published in the journal *Rozhledy* (Prospects) VI, 1897, p. 160.

10. In 1900, in the entry on 'design' (*kresba*) in the *Ottův slovník*, we read about the English influence: '*Recently, thanks to the example of England and the heyday of the applied arts and crafts, considerable attention has been given to instruction in drawing at schools of art, craft schools and schools of further education. In England, this organisation, aimed at imparting drawing skills across the board, is very complex. Schools of art and art classes train skilled draughtsmen to play a practical role in the applied arts and crafts; meanwhile, a central institute, the Royal College of Art at the Kensington Museum, educates the necessary teaching workforce. There are schools of art and art classes all over England and they are always to be found in the midst of a practical movement of applied arts and crafts. For example, there are more than 1,500 draughtsmen in Nottingham, almost all of whom trained at the school of art there. They have played a key role in the great blossoming of the Nottingham lace industry* [...] *The school in Belfast has produced draughtsmen who work in the linen industry, in artistic smithery, in the printing of cotton and in lithography; likewise, there is a superb school in Birmingham and Manchester, where Walter Crane worked until recently. We see the impact of this instruction in applied drawing in all fields of English industry, which, it must be admitted, has at its disposal the best workforce of draughtsmen available. In England there are 438 of such drawing schools, not including the 278 art schools that also teach drawing. These kinds of schools have also been established in other states and countries*'. *Ottův slovník naučný* (Otto's encyclopaedia), Praha 1900, vol. XV, pp. 127-129.

11. Although there were certain distinguishing national features, the basic general characteristics and educational models were similar in various countries, in particular in the English-, French- and German-speaking world. See: Stuart Macdonald, *The History and Philosophy of Art Education*, London 1970. – Idem, *A Century of Art and Design Education. From Arts and Crafts to Conceptual Art*, Cambridge 2005. – David Thistlewood (ed.), *Histories of Art and Design Education: Cole to Coldstream*, London 1992. – Guentin Bell, *The Schools of Design*, London 1963. – Frédéric Ballon, Teaching the Decorative Arts in the Nineteenth Century. The Ecole Gratuite de Dessin, Paris, *Studies in the Decorative Arts* III, 1996, No. 2, pp. 77-107. – Stéphane Laurent, *Les Arts Appliqués en France. Génèse d'un enseignement*, Paris 1999. – Idem, Art, Dessin, Industrie, *La Revue*, Musée des Arts et Métiers, 1996, No. 16, pp. 16-24. – Rudolf Čermák, *Historie vyučování kreslení* (The history of instruction in drawing), Praha 1939–1940. – Arnošt Rosa, Jaroslav Jindra, *Průmyslové a odborné školství v Republice československé* (Craft and trade education in the Czechoslovak Republic), Praha 1928.

12. Joseph Schmidt, *Pestalozzi und sein Neuhof*, Zürich 1848. – Wichard Lange (ed.), *Friedrich Froebel's gesammelte pädagogische Schriften*, Berlin 1862, and a number of other texts.

13. Banham also mentions the influence of these teachers on the development of instruction in drawing: Reyner Banham, *Theory and Design in the First Machine Age*, Cambridge, 1980. See also: J. Abbott Miller, Elementary School, in: Ellen Lupton – J. Abbott Miller (eds), *The Bauhaus and design theory*, New York 1993, pp. 4-22.

14. Alois Studnička, Kreslivo Grandauerovo a Andělovo (Grandauer and Anděl's drawing), *Český kreslíř* (The Czech draughtsman), I, 1881, No. 1, pp. 19-20; No. 2, p. 39. – Čermák (see note 11), vol. 2, p. 5. – Lada Hubatová-Vacková, Vulcan's Engagement to Venus: Alois Studnička's Venture into the Applied Arts, *Umění* LVII, 2009, pp. 453-468.

15. Anton Anděl, *Ornamentale Formenlehre, Das Geometrische Ornament und das Polychrome Ornament, ein Lehrmittel für den Elementaren Zeichnen-Unterricht and Real un Gewerbeschulen*, Wien 1879, second edition.

16. The French word '*dessin*' is defined as '*a drawing, in the narrower sense of the word a pattern, in particular a pattern for fabrics, for tapestries, a drawing that repeats*.' '*Dessinateur*' is here defined as '*a drawer in general, in the narrower sense a drawer of patterns*.' See: *Ottův slovník naučný*, 1893, vol. 7, p. 392.

17. At the end of the 19th and beginning of the 20th century, art education included study of the physiology of sight and the development of perception. See: Anton Anděl, *Moderní vyučování kreslení* (Modern instruction in drawing), Wien 1903, p. 7: '*Our drawings are determined by the organisation of sight*'.

18. Ibidem, p. 7.

19. The '*international conferences on the development of drawing, art education and its application in industry*', where drawing teachers passed on their experiences, are of interest. The first conference was held in 1900 in Paris, 1904 in Bern, 1908 in London, 1912 in Dresden, and 1925 in Paris. In 1928 the International Conference on Drawing, Art Education and Applied Arts was held in Prague.

20. Lineaments – '*the most important linear elements*'. See: Anděl (see note 17).

21. The German physiologist Max Verworn used the contrasting terms *ideoplastische – physioplastische* (ideoplastic – physioplastic) in his *Zur Psychologie der primitiven Kunst*, Jena 1908. In the Czech literature, one finds the term 'ideoplastic' in the writings of V. V. Štech and František Kovárna.

22. '*Outline is the Alpha and Omega of Art* [...] *the function of outline is the definition of the boundaries of form.'* Walter Crane, *Line and Form*, London 1900, p. 1.

23. Walter Crane, *The Bases of Design*, London 1898, p. 215. '*While much early ornament, as we have seen, is traceable to a constructive origin, another kind, or another branch of the tree of design is traceable to a symbolic origin, and springs from the endeavour to express thought – to find a succinct language in which to express some sense of the great powers of nature, and their influence upon the daily life of man – to embody even in a pictorial emblem, symbol, or allegory his primitive conceptions of order of the universe itself.*'

24. Josef Vydra, Zpět k obrysové kresbě (Back to contour drawing), *Výtvarné snahy* (Artistic endeavours), VIII, 1926–1927, p. 232.

25. Ellen Lupton, Reading Isotype, in: Victor Margolin (ed.), *Design Discourse: History, Theory, Criticism,* Chicago 1989, p. 152.

26. The quotation is from Neurath's introduction to the manifesto 'International Picture Language'. Quoted in: Alan Záruba, Zapomenutý svět moderní vizuální komunikace (The forgotten world of modern visual communication), *Typo*, 3, 2003. See also:

Kateřina Nováčková, Poznámky k Izotypu (Notes on Isotype), VŠUP Praha 2008, unpublished course work.

27. In particular in his 1928 text Analyse des Éléments Primaires dans la Peinture, in: Vassily Kandinsky, *Écrits complets*, vol. 2, Paris 1970, pp. 321–322.

28. Georges Roque, *Qu'est-ce que l'art abstrait*, Paris 2003, p. 353. Roque provides a list of these elementary grammars of ornament. See, for example: Jules Bourgoin, *Grammaire élémentaire de l'Ornement pour servir à l'Histoire, à la Théorie et à la pratique des Arts et à l'Enseignement*, Paris 1880.

29. Theo van Doesburg, Vers un art élémentaire, *Vouloir* I, No. 19, March 1926, n. pag.

30. The early drawings of Marie Teinitzerová (1879 Čížkov – 1960 Jindřichův Hradec) are stored at the Jindřichův Hradec Museum in Jindřichův Hradec. I would like to thank Jakub Valášek for his comments and advice on the material.

31. Teinitzerová sent her work to the drawing teacher Zdeňka Vorlová. See: the Marie Teinitzerová collection, State District Archive of Jindřichův Hradec, Personal papers and documentation 1893–1979, inv. No. 747, carton 94, doc. No. 91. See also: Miroslav Hašek, *Marie Teinitzerová*, České Budějovice 1971.

32. John Lindley, *Symmetry of Vegetation. The Substance of three lectures delivered to the students of practical art*, London 1854, p. 5. '*Flowers or other natural objects should not be used in ornament, but conventional representations founded upon them, sufficiently suggestive to convey the intended image to the mind, without destroying the unity of the object they are employed to decore.*'

33. Lada Hubatová-Vacková, Přírodověda jako rukověť designéra (The natural sciences as the handbook of the designer), *Vesmír* (Cosmos) LXXXVII, May 2008, pp. 342–344. – Idem, Aspect and abstraction: reproducibility of natural forms in decorative arts, mostly in 19th century, in an anthology of papers presented at an international, interdisciplinary conference: Amrei Wittwer – Elvan Kut – Vladimir Pliska – Gerd Folkers (eds) *Reproducibility – Arts, Science and Living Nature*, Zürich 2009, pp. 63-69.

34. There are many thought-provoking studies on this theme. Waenerberg, however, provides the best analysis of the connection between the history of scientific depictions and ornamental stylisation. Annika Waenerberg, *Urpflanze und Ornament. Pflanzenmorphologische Anregungen in der Kunsttheorie und Kunst von Goethe bis zum Jugendstil*, Ekenäs 1992. See also: Barbara Whitney Keyser, Ornament as Idea: Indirect Imitation of Nature in the Design Reform Movement, *Journal of Design History* XI, 1998, No. 2, pp. 127-145.

35. Stuart Durant, Christopher Dresser and the Use of Contemporary Science, in: *Christopher Dresser in context : papers of the symposium held jointly by the Victoria and Albert Museum and the Decorative Arts Society*, London 2004, pp. 23-30.

36. On the vitalist approach and the description of the line as a manifestation of power, see also: Petr Wittlich, *Umění a život – doba secese* (Fin-de-siècle art and life), Praha 1986, p. 70.

37. Owen Jones, *The Grammar of Ornament*, London 1856. For this handbook, the botanist and designer Christopher Dresser followed botanical conventions in transforming plant forms into ornament.

38. Jones (see note 37). '*All ornament was rather based upon an observation of principles which regulate the arrangement of form in nature, than on an attempt to imitate the absolute forms of those works* [...] *true art consisting in idealising, and not copying, the forms of nature* [...] *we have shown several varieties of flowers, in plan and elevation, from which it will be seen that the basis of all form is geometry, the impulse which forms the surface, starting from the centre with equal force, necessarily stops at equal distances; the result is symmetry and regularity.*'

39. I was able to assess the practical impact of teaching lessons and methods on the applied-art schools and trade schools by looking at the school assignments and exams, which are preserved in the archives of the original schools (the school of ceramics in Bechyně), and in museums and libraries (the Museum of Decorative Arts in Prague, part of the archive of the hosiery school in Krásná Lípa; the Museum of Glass and Jewellery in Jablonec nad Nisou, material from the metal-working school in Mikulášovice; the North Bohemian Museum in Liberec, the textile school in Liberec and the weaving school in Varnsdorf; the Regional Museum in Teplice, the Teplice-Šanov school of ceramics, and others). I would like to thank Jiří Novotný, Iva Knobloch, Jana Nová, Oldřich Palata and Kateřina Suchá, among others.

40. Maurice Pillard Verneuil, *Étude de la Plante, son application aux indrustries de l'art*, Paris 1904, p. 38. Verneuil describes ornamental interpretation thus: *'Qu'est-ce donc que l'interprétation? L'interprétation est la simplification, l'ornemanisation d'une forme que l'on tire de l'état nature pour l'amener à l'état ornemental* [...] *négligeant le pittoresque d'une plante, d'une fleur, on extrait et on crée un principe ornemental* [...] *Nous avons cherché à inscrire chaque forme dans une figure géometrique. Or, la transposition de la forme naturelle en forme géomterique est la stylisation la plus simple. Donc, pour interpréter une plante en vue de son exécutions matérielle, suivant et respectant la loi que nous avons dégagée, nous reprenons les éléments divers en les simplifiant, nous les juxtaposons et reconstituons une forme ornementale répondant aux qualités requises pour la bonne décoration et la facile exécution.*'

41. The term 'art nouveau' hardly ever appears in the literature of the period.

42. *Ottův slovník naučný*, vol. 24, Praha 1906, p. 130.

43. Otakar Zich, O výtvarné stylisaci (On artistic stylisation), *Drobné umění* (Miniature art) I, 1920, pp. 6-11.

44. There is probably no catalogue or documentation of the exhibition. Later publications drew attention to the great influence that the exhibition had. O. F., Nový směr ve školním kreslení (A new trend in school drawing), *Dílo* (Oeuvre) IV, 1906, p. 152. – Rudolf Čermák, *Historie vyučování kreslení* (The history of instruction in drawing), Praha 1939–1940, vol. 2, p. 17.

45. Karel V. Mašek, Studium ornamentiky (The study of ornament), *Dílo* I, 1903, pp. 121-127. Other teachers also adopted the method of analytical stylisation of ornament (Prof. Beneš, analytical drawing of flowers; Prof Ambrus, special school for textile art). O. F. (see note 44), p. 152.

46. Alois Studnička, Rostlina v umění (The plant in art), *Český kreslíř* I, 1881, No. 2, p. 28. In a series of articles for the journal *Český kreslíř* in 1881-1882, Studnička reflected on ornament and the ways in which '*the plant is prepared for art*'. He had this to say about methods of stylisation: '*When an Egyptian painted a beautiful water lily for the first time, he may have copied it in every respect, even the random features of the individual sections* [...] *when he drew it a second time based on another specimen, he noticed differences but he also observed that the flower had the same number of leaves, that they were similarly laid out and enveloped in tepals in the same way* [...] *the fourth time he noted the principle according to which they were joined* [...] *the fifth time he drew from memory a lily that was free of all the random features of the various specimens, while all of the characteristic features of the flower were preserved. This time most definitely he arranged the leaves in a regular manner and gave them a standard shape, omitting any chance elements that appeared in the various flowers, and thus he stylised or idealised* [the lily].'

47. Anton Anděl, *Das Geometrische Ornament. Erster Band der Ornamentalen Formenlehre. Ein Lehrmittel für den Elementaren Zeichen-Unterricht an Real- und Gewerbeschulen*, Wien 1879, 1884.

48. Moritz Meurer, *Das Studium der Naturformen an kunstgewerblichen Schulen. Vorschläge zur Einführung eines vergleichenden Unterrichts*, Berlin 1889. – Idem, *Pflanzenformen. Vorbildliche Beispiele zur Einführung in das ornamentale Studium der Pflanze mit Texte*, Dresden 1895. – Idem, *Meurer's Pflanzenbilder. Ornamental verwerthbare Naturstudien fur Architekten, Kunsthandwerker, Musterzeichner*, Dresden 1901. – Idem, *Vergleichende Formenlehre des Ornamentes und der Pflanze. Mit besondere Berücksichtigung der Entwickelungsgeschichte der architektonischen Kunstformen,* Dresden 1909.

49. Anton Seder – Martin Gerlach, *Die Pflanze in Kunst und Gewerbe, Darstellung der schönsten und formereichsten Pflanzen in Natur und Styl zur praktischen Verwerthung für das gesammte Gebiet der Kunst und des Kunstgewerbes*, Wien 1896.

50. Maurice Pillard Verneuil, *Étude de la Plante, son application aux indrustries de l'art*, Paris 1904. – Maurice Pillard Verneuil (ed.), *Encyclopédie artistique et documentaire de la plante,* Paris 1904–1908. – Idem, *Animal dans la décoration*, Paris 1897. Verneuil and Alfons Mucha were close colleagues; Mucha collaborated with him on many albums.

51. Alois Bouda, *Rostlina v dekorativním umění* (The plant in decorative art), Praha 1903. Bouda's wife, the painter and designer Anna Suchardová-Boudová, followed his example and applied it in her work. Cf. Alena Adlerová, Užité a dekorativní umění secese (Art nouveau applied and decorative art), in: Vojtěch Lahoda – Mahulena Nešlehová – Marie Platovská, et al. (eds), *Dějiny českého výtvarného umění 1890-1938* (The history of Czech art 1890–1938), IV/1, p. 215.

52. Thomas Weigner, *Naturstudien und Kompositionen,* Varnsdorf 1906. – Idem, *Studie a plošné vzory* (Studies and flat patterns), Varnsdorf 1910.

53. Eugène Grasset, *La Plante et ses applications ornementales*, Paris 1896. – Idem, *Méthode de la composition ornementale*, Paris 1905.

54. Gustav Pazaurek (1865-1935) studied art history at the German university in Prague. Until 1906, he was influential as the director of the North Bohemian museum of industry in Liberec. He then departed for Stuttgart, where he played an important role in debates about the applied-arts in the context of the German *Werkbund*. Gustav Pazaurek, *Die Lieblingspflanzen in den dekorativen Künsten*, Braunschweig 1900, p. 22.

55. Moritz Meurer, *Das Studium der Naturformen an kunstgewerblichen Schulen. Vorschläge zur Einführung eines vergleichenden Unterrichts*, Berlin 1889, p. 20. '*Aber auch die allen Kunstformen zu Grunde liegenden geometrischen Dispositionen wird er schon in der gesammten Schöpfung erkennen. In den Thieren und Pflanzen freier entwickelt, wird er sie am strengsten in den anorganischen Mineralien und Krystallen sehen und aus deren Gebilden sich die primären Formen ableiten können, die ihm die Ausgangspunkte für die Entwickelung der Composition die Hand geben.*'

56. See also: Hans Macht, Das Constructive Princip in der Ornamentik, *Mittheilungen des K.K. Oesterreich. Museums für Kunst und Industrie* XI–XII, 1896-1897, pp. 526-536.

57. Jan Michl, Gombrichova adopce hesla Forma sleduje funkci (Gombrich's adoption of the slogan 'form follows function'), in: František Mikš – Ladislav Kesner (eds), *Gombrich. Porozumět umění a jeho dějinám* (Gombrich. Understanding art and its history), Brno 2010, pp. 209-233.

58. Eugène Grasset, *Méthode de la composition ornementale*, Paris 1905, p. VI. *'L'intelligence de l'homme est ainsi faite que, pour qu'il comprenne bien les phénomènes naturels et pour que sa mémoire les enregistre, il faut les "schématiser", en extraire le principe simplifié et appauvri dont la clarté, dépouillée des accessoires, coïncide avec la localisation un peu étroites des facultés cérébrales. C'est de cette manière que procèdent toutes les études de sciences qui vont du simple au composé. De cette façon, la Nature complexe et variable peut être saisi et comprise dans l'ensemble d'un de ces phénomènes. Il ne sagit pas seulement d'un important et fondamental classement des formes, mais encore de l'isolement d'un principe supposé invariable et dégagé entièrement de ses conditions facultatives*'. See also: Yvonne Brunhammer, Eugène Grasset – La Flore comme alphabet, *Connaissance des Arts*, 1978, No. 317, pp. 64-70. His repertoire of ornamental motifs did not draw on the past but was, on the contrary, unorthodox and based on scientific depictions (cross-sections of bone, microphotographs of blood cells, bacteria, etc.).

59. Ernst Hans Gombrich, *Meditations on a Hobby Horse and other essays on the theory of art*, Oxford 1963, p. 6. Gombrich coined the term '*minimum image*' for images that were perceptually, biologically significant.

60. Wassily Kandinsky, *Punkt und Linie zu Fläche*, Weimar 1923; in Czech *Bod, linie a plocha* (Point, line and surface), Praha 2000, p. 76.

61. Josef Jaroslav Filipi, *Plošná stylisace dle přírody* (Flat stylisation based on nature), Praha 1912. Josef Jaroslav Filipi (1875–1954) studied at the Prague Academy of Applied Arts in 1890-1891. At the turn of the century, he published in *Volné směry* and later in the journals *Náš směr* (Our direction) and *Pedagogické rozhledy* (Pedagogical views). He worked as a teacher of applied drawing at weaving schools in the Silesian town of Frýdek and in Humpolec.

62. Ibidem (see note 61), p. 46.

63. Josef Jaroslav Filipi, Abstraktní ornament (Abstract ornament), *Náš směr* I, 1910, pp. 72, 88, 104.

64. Pelant referred to the book of the neo-Darwinist Ernst Haeckel, *Kunstformen der Natur*, Leipzig – Wien 1899–1903, and to Endel's ornament.

65. Emanuel K. Pelant, *Dekorativní komposice, pravidla krásna v uměleckém průmyslu se zvláštním zřetelem pro školy odborné a řemeslnické pokračovacího oboru truhlářského* (Decorative composition, the rules of beauty in the applied arts, with particular attention to trade and craft schools of advanced cabinet-making), Vodňany 1906. The architect Pelant taught a master class at the *k. k.* woodworking school in Valašské Meziříčí.

66. Lada Hubatová-Vacková, Ornament motýlích křídel. E. H. Gombrich, dekorativní umění, přírodověda a Gestaltpsychologie (The ornament of butterfly wings. E. H. Gombrich, decorative art, the natural sciences and Gestalt psychology), in: Mikš – Kesner (see note 57), pp. 59-85. Tomáš Weigner (1850 in Třebíč – 1916 in Varnsdorf) was a Czech-German draughtsman. From 1879 to 1914 he was director of the weaving school in Varnsdorf. He published several anthologies of patterns, which are deposited in the library of the Museum of Decorative Arts in Prague.

67. Lada Hubatová-Vacková, Kreslič a kreslíř: Corda a Mánes (Scientific illustrator and artist: Corda and Mánes), *Vesmír* LXXXIX, January 2010, pp. 66-68. This text briefly describes the relationship between microscopic and decorative patterns.

68. F. X. Jiřík, John Ruskin a jeho umělecká teorie (John Ruskin and his theory of art), *Dílo* III, 1905, pp. 3-76.

69. In his 1858 lecture entitled The Deteriorative Power of Conventional Art over Nations, John Ruskin criticised the tendency to introduce science into the methods of decorative art. He explicitly addressed this trend in a series of lectures published in the book *The Eagle's Nest* in 1872. See: *The Eagle's Nest*, *Ten lectures on the relation of natural science to art, given before the University of Oxford*, London 1872.

70. John Ruskin, *Sézam a lilie* (*Sesame and Lilies*), Praha 1901. F. X. Šalda translated the text from English and wrote the introduction.

71. Stuart Macdonald, *A Century of Art and Design Education. From Arts and Crafts to Conceptual Art*, Cambridge 2005, pp. 132-140.

72. Liberty Tadd, *New Methods of Art Education,* New York 1899.

73. John S. Clark – Mary D. Hicks – Walter S. Perry, *Základy umělecké výchovy* (The Prang Elementary Course in Art Instruction), Praha 1903.

74. Robert Catterson-Smith developed this technique for the field of applied decoration.

75. Filipi (see note 63), p. 88.

76. K. H. O, Freie Ornament-Motive von Katharine Schäffner – Prag, *Deutsche Kunst und Dekoration* XIV, Apr. 1904 – Sept. 1904, p. 468.

77. The author lists the following as designers of free ornament: Otto Eckmann, Hans Christiansen, Hermann Obrist, Bernhard Pankok, Rudolf Rochga, Paul Lang, Paul Haustein, Hugo Steiner from Prague.

78. K. H. O. (see note 76). *'Hier streift diese Art Ornamentik das mystische der malenden Musik, hier setzt die eigentliche Erfindung, das innere Schauen des Kompositions-Ornamentes ein, wenn auch oft mit dem grossen Fragezeichen "was will Das werden?" Die jetzt mit solchen Fragment-Ornamenten zum ersten Male auf den Plan tretende junge Künstlerin Katharine Schäffner –Prag.'*

79. Ferdinand Avenarius, *Eine Neue Sprache?, 42 Zeichnungen von Katharine Schäffner*, München 1908. See also: Ferdinand Avenarius, *Kunstwart Arbeit*, München 1908.

80. František Kovárna, *Malířství ornamentální a obrazové. Příspěvek k určení výtvarné funkce předmětu* (Painting of ornament and pictures. A report on the designation of the artistic function of the object), Praha 1934. The work was written at the instigation of his teachers Otakar Zich and Vojtěch Birnbaum. It includes a useful bibliography.

81. Alois Riegl, *Stilfragen. Grundlegung zur Geschichte der Ornamentik*, Wien 1893.

82. Wilhelm Worringer, *Abstraktion und Einfühlung*, München 1908.

83. Filipi (see note 61), p. 1.

84. Ralph Nicholson Wornum, *The Analysis of Ornament*, London 1865.

85. Václav Vilém Štech, *O projevu výtvarnou formou* (On expression in Art), Praha 1915.

86. August Schmarsow, *Grundbegriffe der Kunstwissenschaft*, Leipzig 1905.

87. Štech (see note 85), p. 13.

88. Liberty Tadd (see note 72).

89. Anděl (see note 17), p. 7.

90. Likewise, in Johannes Itten's preliminary course in the 1920s, the aim was to harmonise mind and body through various means, including the use of two-handed drawing. Norbert M. Schutz, Le corps préliminaire sous Johannes Itten. La formation d'un homme complet, in: Jeannine Fiedler – Peter Feierabend, *Bauhaus*, Köln 2000, pp. 360-368. In this text, Itten's approach is presented as his personal contribution to an original method of teaching, which is wrong.

91. Miroslav Tyrš, *Základové tělocviku* (The foundations of gymnastics, 1872) Praha 1926. – L. Jandásek (ed.), *Výbor z úvah, řečí a spisů dr. Miroslava Tyrše* (An anthology of reflections, speeches and writings by Dr. Miroslav Tyrš), Brno 1932. – Emanuel Siblík, *Tyrš a rytmika* (Tyrš and rhythmic gymnastics), Praha 1933.

92. Miroslav Tyrš, *Tělocvik v ohledu estetickém* (Gymnastics from the aesthetic perspective), Praha 1873.

93. Otakar Zich, *Sokolstvo z hlediska estetického* (The Sokols from the aesthetic perspective), Praha 1920, p. 26.

94. See also: Libuše Heczková, Tělo v pohybu. Národní sokolské tělo od daltonismu k rytmice (The body in motion. The national Sokol body, from Daltonism to rhythmic gymnastics), in: Taťána Petrasová – Pavla Machalíková (eds), *Tělo a tělesnost v české kultuře 19. století* (The body and corporeality in nineteenth-century Czech culture), Praha 2010.

95. Arnauld Pierre, Sens du mouvement et images motrices dans les début de l'abstraction, in: Pascal Rousseau, *Aux origines de l'abstraction*, Paris 2003, pp. 84-104.

96. Walter Crane, *The Claims of Decorative Arts*, London 1892, p. 170. '*The artist has to express not to arrested, but continuous action. He must suggest* [...] *the moment before and the moment after, and that often in one figure. The result has been a certain convention, which conveys the idea of speed to the mind more completely and convincingly than the exact imitation of the action of any given moment could possibly do.*' Walter Crane, *Line and Form*, London 1900, p. 15. '*The wave-line* [...] *may be said not only to suggest movement, but also to describe its direction and force. It is, in fact, the line of the movement.*'

97. Walter Crane, *Line and Form* (see note 96), p. 212. Here there is an illustration of a dance gesture with a diagrammatic, linear record of the movement.

98. Georges Auriol, Maurice Pillard Verneuil, Alfons Mucha, *Combinaisons ornementales*, Paris 1901. The publication was sold with two hand mirrors, which could be used to multiply the figures along the lines of the kaleidoscope principle. A similar version of the book was also published in German, but with different designs. – Idem, *Die Grotesklinie im Ornament und in der Dekorationsmalerei*, Berlin –Köln, no date. On this book, abstraction and the kaleidoscope principle, see: Lada Hubatová-Vacková, Crystal and Kaleidoscopic Abstraction: Scientific Photography and Cubist Design, *Centropa*, New York, vol. 9, No. 1, January 2009, pp. 28–42.

99. Arnauld Pierre, Extases musicales et prise du regard, Mucha et la culture de l'hypnose, in: Jean-Louis Gaillemin, *Alfons Mucha*, Paris 2009, pp. 25-31.

100. Pascal Rousseau, 'Arabesques'. Le formalisme musical dans les débuts de l'abstraction, in: Pascal Rousseau, *Aux origines de l'abstraction*, Paris 2003, pp. 230-246.

101. Albert de Rochas, *Les Sentiments, la Musique et les Gestes*, Grenoble 1900.

102. *Dekorative Vorbilder. Eine Sammlung von Figürlichen Darstellungen, kunstgewerblichen Verzierungen, modernen Ornamenten, dekorativen Tier und Pflanzentypen, heraldischen Motiven, Alegorie für Zeichner, Maler, graphische Künstler, Dekorateure, Bildhauer, Architekten*, Stuttgart 1905. Kupka's reproduction of the watercolour *Waves* from 1902 is on plate No. XI.

103. *Dekorative Vorbilder. Eine Sammlung von Figürlichen Darstellungen, kunstgewerblichen Verzierungen, modernen Ornamenten, dekorativen Tier und Pflanzentypen, heraldischen Motiven, Alegorie fur Zeichner, Maler, graphische Kunstler, Dekorateure, Bildhauer, Architekten*, Stuttgart 1901–1909.

104. Maurice Pillard Verneuil, L'Insecte, *Art et Décoration* XV, January-June 1904, pp. 1-22.

105. Maurice Pillard Verneuil, Les Reptiles, *Art et Décoration* XIX, January-June 1906, pp. 1-25. See also: Ornamentální arabeska jako otisk pohybu (Ornamental arabesque as the imprint of movement), *Vesmír* LXXIX, October 2010, s. 647–649.

106. Lenka Bydžovská – Roman Prahl, *Volné směry. Časopis pražské secese a moderny* (Free directions. The journal of the Prague art nouveau and modernism), Praha 1993, p. 41. The competition designs for the binding and endpaper of the journal *Volné směry*: *Volné směry* IV, 1899–1900, pp. 156-157. I would like to thank Iva Knobloch and Lucie Vlčková for pointing this out to me.

107. Emanuel Pelant, Ornamentální komposice (Ornamental composition), *Náš směr* III, 1911–1912, p. 26. '*Memorise all movements at rest and in motion, gaiety and grief, so that you can reproduce them in a composition from memory*.'

108. Miroslav Jirka, Rok po vídeňském rozkvětu umělecké výchovy (A year after the Viennese heyday of art education), *Výtvarná výchova* (Art education) I, 1935, No. 2, p. 10. See also: *Saur- Allgemeines Künstlerlexikon* IX, München – Leipzig 1998.

109. Otto Hahn – Gladys Fabre (eds), *Aspects historiques du constructivisme et de l'art concret*, Paris 1977.

110. Willy Rotzler (ed.), *Constructive concepts: A history of constructive art from cubism to the present*, Zurich 1977.

111. Markus Brüderlin (ed.), *Ornament and Abstraction: the dialogue between non-Western, modern and contemporary art*, Cologne 2001.

112. Roque (see note 28).

113. *Anketa o ornamentu (A survey on ornament), Náš směr* XI, 1924–1925.

Redakční poznámka

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