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«The way it becomes definable, trainable, and predictable plays a significant role in the production and perception of the modern visual environment. This is not only a historical but also an ongoing project of virtuality.»

THE SCAFFOLD OF FANTASY

Zhao Yue

In his 1826 publication on subjective vision, German physiologist Johannes Müller was deeply concerned with fantasy as an interactive field between sense and mind.⁽¹⁾ For him, phantasmas are not necessarily associated with neurological disorders, such as those observed in fever, hysteria, and hypochondria, but also occur in a perfectly healthy body. It is not a sign of physical and mental weakness but rather a demonstration of the richness of the human vision — where the fictive and the objective can function equally well. With a vivid story by Goethe, Müller illustrated the productivity of the phantasma:

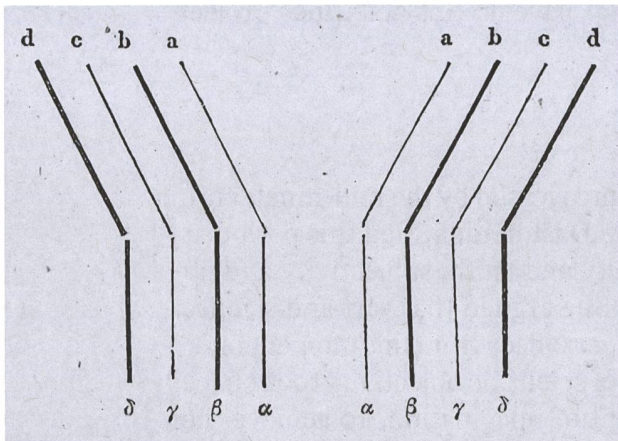
«When I closed my eyes and lowered my head, I could cause the image of a flower to appear in the middle of the visual organ. This flower did not retain its first form for a moment but unfolded itself and developed new flowers from within, consisting of colored or sometimes green leaves. These were not natural flowers but fantastic forms, though as regular as the rosettes of sculptors. I was unable to fix this sprouting creation. It lasted as long as I desired, neither got tired nor intensified.»

«Wenn ich die Augen schloß und mit niedergesenktem Haupte mir in die Mitte des Sehorganes eine Blume dachte, so verharrte sie nicht einen Augenblick in ihrer ersten Gestalt, sondern sie legte sich auseinander, und aus ihrem Innern entfalteten sich wieder neue Blumen aus farbigen, auch wohl grünen Blättern; es waren keine natürliche Blumen, sondern phantastische, jedoch regelmäßig wie die Rosetten der Bildhauer. Es war unmöglich, die hervorsprossende Schöpfung zu fixiren, hingegen dauerte sie so lange als mir beliebte, ermattete nicht und verstärkte sich nicht.»⁽²⁾

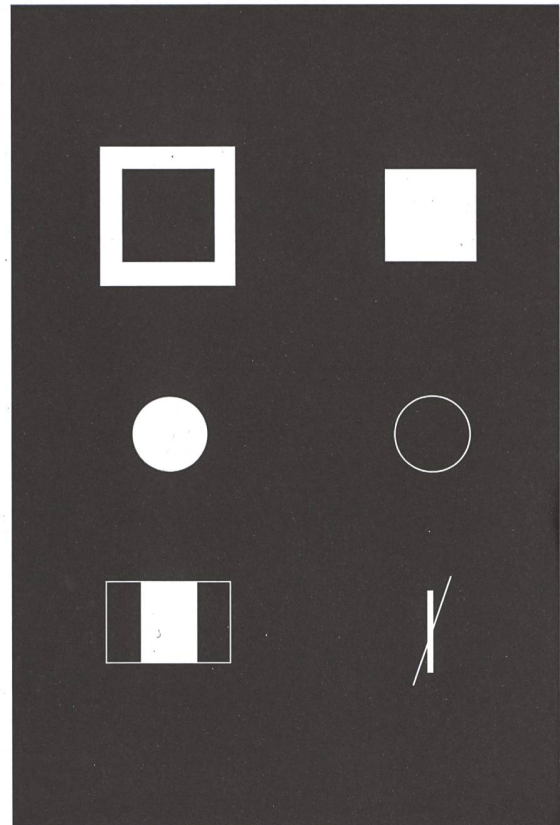
This story hints at three vital elements of Müller's definition of fantasy: 1 — it begins at the moment when vision deviates from matter (with the action of closing the eye); 2 — its objects are bounded in the visual field (by producing an image); 3 — it can constrain, transform, and extend sensual information (in ever-changing forms). Describing more cases, Müller shows that fantasy can complete the incomplete, animate the inanimate, and, most importantly, build «a composite architectural figure» from the chaos of sensations. He argues that our sensory activity is never complete without the faculty of fantasy. It is the designer of the visible world.

Müller's understanding is not entirely new. His work can be regarded as a modern physiological translation of classic philosophical theories that emphasize the intermediary nature of fantasy, best summed up in Aristotle's dictum — «there is no thought without phantasia, just as there is no phantasia without sensation.»⁽³⁾ According to Müller, light sensation «Lichtempfindung» is an expression of excited optic nerves, whether caused by external optical stimuli (such as pressure, friction, galvanism) or internal stimuli generated by the imagination. In this sense, the study on the fantastic is crucial to understanding the internal mechanism of vision. For Müller, visual perception is a neurophysiological system of energy conversion and transmission which has no necessary connection with any actual light.^(fig. a)

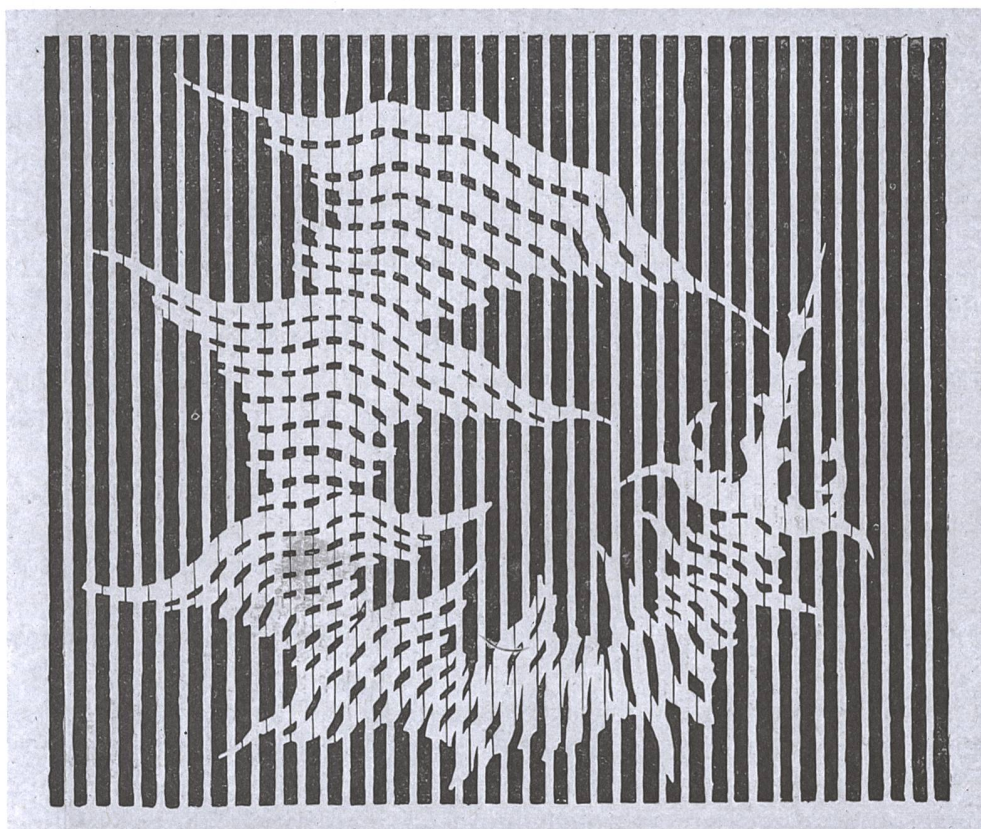
If this striking conclusion comes from Müller's extensive research on human and animal vision based on comparative anatomical method, his study on fantasy is mainly grounded on a descriptive approach (comparing



(fig. a) Graphics showing that «all parts of the optic nerve are reproduced in the parts of the eye». J. Müller, *Über die phantastischen Gesichterscheinungen*, Koblenz 1826



(fig. b) Graphics of optic illusions. T. Lipps, *Raumästhetik und geometrisch-optische Täuschungen*, Leipzig 1897



(fig. c) Design for the Lattice above the Loggia Doors. A. Endell, «Das Wolzogen-Theater in Berlin», *Berliner Architekturwelt*, 1902

his own experience with those described in the literature) and intensive concentration exercises. In this way, the study demonstrates the universality and productivity of fantasy as well as its fragility and instability. Moreover, it exemplifies the potential threat posed by chasing such phenomena to the stability of the subject as a whole. After a neurological crisis in 1827, Müller, the then leader of experimental physiology, gave up this ambitious project of scientizing fantasy.

II

The meaning of fantasy became highly controversial by the mid-nineteenth century. The historian of science Lorraine Daston identified this period as critical in drawing the line between beauty and truth, subjectivity and objectivity, individualism and collectivism. She argued that «art and science diverged in their aims and their collective personae» from this moment on.⁽⁴⁾ On the one hand, new ideas and practices of scientific objectivity took shape in the effort to avoid the unstable element of imagination. To achieve the simplest factual narrative, most advanced technologies were introduced into scientific observation and documentation. A large number of «automatic» devices were invented to minimize the omnipresent subjectivity, such as the various self-writing devices and long-term registering apparatus used in physiological experiments.⁽⁵⁾

On the other hand, artists celebrated fantasy as «the queen of all faculties.» In «The Salon of 1859» the poet Charles Baudelaire speaks of a «constructive imagination» that is both analysis and synthesis. This «constructive imagination» is «by its nature, capable of penetrating beneath the surface of appearances and of detecting hidden analogies between different material manifestations, different modes of perception, and different levels of existence.»⁽⁶⁾ He calls for an imaginative art that aspires to illuminate things with one's mind and to project one's reflection upon other minds. In short, Baudelaire explains that «the whole visible universe is but a storehouse of images and signs to which the imagination will give a relative place and value; it is a sort of pasture which the imagination must digest and transform. All faculties of the human soul must be subordinated to the imagination, which puts them in requisition all at once.»⁽⁷⁾

The historian Jacob Burckhardt also considered fantasy an essential faculty for aesthetic experience. In «Der Cicerone» (1855), the most popular art-historical publication ever, he attempted to school the perceptual apparatus of the reader-viewers through fantasy as much as intellectual study. The eye was depicted as an agency restoring the ruins and enlivening them with human feelings and emotions.^{(8) (9)}

This projective understanding of fantasy resonated with the concept of empathy developed later in the works of the psychologist Robert Vischer and Theodor Lipps. Vischer first speaks of imagination as an act of simulating, visualizing, and spiritualizing. He attempts to clarify the nature of imagination by distinguishing between the inner and the outer. For him, the inner imagination is not an elementary force of the soul but a combination of feeling, representation, and will. It abstracts the real from the confusion and irrationality of nature through the unconscious norm of the body. If this

process is nebulous, outer fantasy, id est, art, could make the mechanism visible through its objective «Anschaulichkeit».⁽¹⁰⁾

Moreover, Vischer conceives fantasy as a hybrid field in which «contradictions of the world — repose and motion, self and non-self — merge into a mysterious whole.»⁽¹¹⁾ In this field, the sensual and the spiritual appear as one which can be expressed as «a spiritual eye» or «an ocular spirit». Following Vischer's argument, Lipps further differentiates actions that happened in the physical, fantastic, and intellectual spheres while claiming that these actions are equally real. And he explicitly states that the concept of empathy deals with the action in the imagination.⁽¹²⁾ Lipps' interpretation of empathy derives largely from his long-term research into geometrical-optical illusions. It was also this research that brought fantasy back into the realm of experimental science in the last decade of the nineteenth century.^{(13)(fig. b)}

III

Although not articulated, these theoretical studies all imply that fantasy can be trained. Müller, for example, suggests that meaningless patches of light appearing in the dark vision will combine into form and space if one observes them long enough. Lipps, on the other hand, trains himself and his reader-viewers on the judgment of size, shape, and distance in constant repetition, seeing this exercise in attentive observation as a way of connecting man with the surrounding world. This synthetic imagination was considered an essential precondition for the modern subject when the mass and speed of the metropolis constantly challenged the stable perception of space and time.

At «Schule für Formkunst» a private art school opened between 1904—1914, Lipps's student, the architect August Endell, attempts to develop a systematic approach in his architectural and pedagogical practices. Endell considers the aim of design education as strengthening fantasy until it becomes «so absolutely sure, so flexible and malleable, and so rich that no limitation of technique and economy can inhibit it.»⁽¹⁴⁾ A sequence of visual techniques — such as enlarging and comparing, dissecting and combining, warping and overlapping — was introduced to provide the necessary material for imagination.

Particular natural objects are given to the students, such as flowers, mussels, beetles, et cetera. They consist of limited elements whose character can be captured by simple means. Endell asks the students to observe these objects «accurately» and draw them «objectively» so that the effect of every single part becomes apparent and the most characteristic parts can be picked out. During this process, the students can use auxiliary means — such as modeling and photographic enlargement — to grasp the delicate effects that are hardly visible in natural perspectives and scales. This exercise aims to break the given objects down into linear elements and color blocks until they become independent from natural forms.

Endell then asks the students to collect and compare similar forms, testing their spectrum of effects by systematically changing their components. In this growing visual repository, form gradually becomes a «malleable», «coherent» substance that can be divided, combined, warped, and superimposed. However, Endell points out that this is a confusing process of trial

and error with no promise of a good result, as long as the theory of pure form has not been established. He believes that this theory, that is to say, «a law of formation and effect» (Bildungs- und Wirkungsgesetz), can be explained in simple and accessible terms. For instance, how balance can be achieved in a form, what its apparent direction of movement is, and how this direction can be changed by adding ingredients, et cetera. ⁽¹⁵⁾

An example illustrates this empirical approach explicitly:

«I take an orchid. I change the proportions and observe how the effect changes. I make the blossom smooth or rough, I accentuate the filaments or make them vanish, I make the bulbs round or skinny. I free the blossom from its stem and conceive it as a loose entity, make cellular shapes on the bulbs, cover the body with dots or decorate it with parallel stripes, dissolve the stripes in the dots again, et cetera. The number of combinations is endless — the more extensive the form-knowledge, the greater the possibilities. But that would all be a worthless gimmick if one did not test the effect step by step with one's feelings and if, in case of an unsatisfactory effect, one did not rest until the unfavorable effect was eliminated through further changes. Gradually one attains some degree of certainty in judging effects; certain principles become clear; one earns an entire system of forms, which serves as the starting point for infinite others.»

«Oder ich nehme eine Lippenblüte, ich verändere die Verhältnisse und achte, wie die Wirkung sich ändert, mache die Lippe rauh oder glatt, lasse die Staubfäden im Rachen verschwinden oder lang hervorstechen, mache sie stark oder ganz dünn mit schweren Staubbeutel. Ich löse sie vom Stengel und fasse sie als frei fliegendes Gebilde auf, verändere sie Staubbeutel in netzförmige Gebilde, bedecke den Körper mit dunkeln Flecken oder verziere ihn mit parallel laufenden Streifen, löse die Streifen wieder in Flecken auf und so weiter. Die Zahl der Kombinationen ist endlos, sie wird um so größer, je umfangreicher die Formerkenntnis entwickelt ist. Doch wäre das alles wertlose Spielerei, wenn man nicht Schritt für Schritt die Wirkung mit dem Gefühl prüfte und wiederum, wenn man etwas Unbefriedigendes entdeckt hat, nicht eher ruhte, als bis durch erneutes Verändern die ungünstige Wirkung beseitigt ist. Allmählich gewinnt man eine gewisse Sicherheit im Beurteilen der Wirkung, bestimmte Gesetzmäßigkeiten werden deutlich; man gewinnt ein ganzes System von Formen, die Ausgangspunkte für unendlich viele andere werden.» ⁽¹⁶⁾

The narration sounds like another version of Goethe's story. Only this time the eyes are open. The fantastic is no longer unfixable and uncontrollable but consciously tested by feeling and guided by reason. ^(fig. c)

IV

From Müller's physiological investigations to Lipps' psychological studies, from Baudelaire's art theory to Endell's design pedagogy, fantasy gradually became the essential faculty of the modern subject in the long nineteenth century. The way it becomes definable, trainable, and predictable plays a significant role in the production and perception of the modern visual environment.

This is not only a historical but also an ongoing project of virtuality.