

## The Angle of Our Vision: About and *A propos* Anamorphosis

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Perspective is generally considered to be the most practical artistic technique for the objective representation of the outside world. Its illusionist and fantastic aspects, which appeared almost coincidentally with its "invention" in the Renaissance period, are much less widely known. As a practising artist, I have been trying to create the kind of work art criticism described, for want of a better name, by the technical term "anamorphosis." The term, which is of Greek derivation meaning "transformation" or "re-formation", was first used in *Magia Universalis*, published in 1657 by the German Jesuit scholar Gaspar Schott. At that time, *magia anamorphotica* was a scholarly pursuit rather than an artistic concern. In Diderot's *Encyclopedia* (1751) the entry on "anamorphosis" contains this explanation: "the expression 'anamorphosis' denotes those unrealistic or distorted representations which nevertheless appear natural and possessing the right proportions if viewed from a certain specific angle." (Strangely enough, the four-volume *Encyclopedia of the Arts* of Budapest publishers *Akadémiai Kiadó* has no entry on anamorphosis.) The contention that anamorphosis was originally a concern of scholars and scientists rather than that of artists holds true even if we note that the first (surviving) anamorphic representations was made by Leonardo da Vinci. In his sketchbook *Codex Atlanticus*, kept in Milan, there are two small silver drawings. They are strange, elongated shapes but if we tilt the sheets and view them in a "foreshortened" way they appear to represent an eye and the head of an infant. A representation like these is usually described as a case of an "under-an-angle" or perspectivic anamorphosis. If the requisite angle of tilt is found these forms can be "back-edited" and this means that the two, originally obviously undistorted, Leonardo drawings can be reconstructed in a relatively simple way. Another, even more curious variety is the so-called "mirror" anamorphosis. Here an object (usually a cylinder-shaped one) with a reflecting surface is placed on the picture that contains a representation distorted to the point of being totally impossible to identify, and the proper image appears on the reflecting surface of the cylinder. In both cases, the spectator gets a spatial illusion of a two-dimensional image: the impression of an at least "two-and-a-half" dimensional image is created. Those familiar with the psychology of vision can offer an explanation for this phenomenon: presumably, the eye always looks for the shape that "makes sense" and pushes what is unidentifiable or undifferentiated one notch lower on the scale of dimensions. And, when these two cases of anamorphosis is considered philosophically, we face the question of the real: whether the amorphous shape on the paper or the reflection on the cylinder or the image in the spectator's mind is the real thing.

It is these works challenging our customary notions of limits, frontiers and dimensions that I want to talk about. I want to address the question why artists create, from time to time, anamorphic representations, and, by doing so, I also hope to make it clear to myself whether it is worth using this nearly five hundred years old technique.

Árpád Mezei, American art historian of Hungarian extraction has an attractive theory. Following Wilhelm Worringer and Heinrich Wölfflin he devised a system according to which, allowing for a degree of simplification, the history of man's changing perspective inform the periodic changes of cultural history. Accordingly, a new period style arises out of a change in human perspective, that is, in the angle and the distance of vision. Anamorphosis and "viewing at an angle" can be seen as correlating notions and this seems to confirm Mezei's thesis that the first great phase of this genre coincided with the period of Mannerism. Mannerism represented a

spectacular departure from the objective method of representation of Renaissance and its correlatives, the horizontal line and the position assumed at a finite distance, and introduced a kind of subjective approach with its viewpoint that departed from the right angle. The most widely known anamorphic painting, Holbein's *The French Ambassadors* represents, in quite a literal way, this change in perspective, and it may well be regarded as a change in period style. Composed for traditional frontal viewing, this Renaissance painting has one problematic detail: the amorphous elongated shape between the two standing figures at the bottom of the picture. This, however, makes visual sense if it is viewed from a different perspective: it appears to be the graphic picture of a human skull.

The flowering of the genre took place in the middle of the 17th century. Books on geometric design were published and workshops were set up. The Minorite Franciscan monastery in Paris was the most famous of these intellectual centres. Descartes also stayed here for a while, and his ideas, particularly his theory of automata expounded in his *Discourse on Method*, influenced the friars who produced anamorphic drawings: Nicéron, Maignan and De Breuil. The other 17th-century setting was the Netherlands. Here, a peculiar spatial variant of anamorphosis was invented in the form of the so-called perspective closets. These are huge "boxes" with a peeping hole through which the viewer can see a painted scene that has proper spatial illusion; the scene is, in most cases, a furnished interior of a room. The most famous of these "peep shows" were produced by Samuel von Hoogstraten, a disciple of Rembrandt. The distorted pictures painted on the inner planes of the box appear as a proper composition governed by the rules of central perspective only when viewed through the hole. Viewed in another angle, the spectacle breaks down into shapeless fragments.

According to Mezei's period scheme, anamorphosis regularly reappears in later art periods, too. As in the twentieth century, it evolves, somewhat unexpectedly, into a number of interesting new forms, I want to discuss these in some detail.

Marcel Duchamp's work bears the mark of the influence of various types of anamorphosis. Setting out on his career as an artist under the aegis of Cubism, he almost immediately started to expand the frontiers of Cubist art in his early work. Unlike the more usual early Cubist still lifes of other artists, he painted his nudes descending a staircase by which he attempted to represent motion that was well defined in time and space on account of the regular iterative structure of the stairs. Already the basic notion of analytical Cubism, the attempt to represent in a single picture visual information gained from viewing the subject matter of the picture from a number of different viewpoints and, by doing so, to implicitly trace the movements of an imaginary spectator, is related to the form of "viewed-at-an-angle" anamorphosis. In the case of the Duchamp nude descending a staircase the situation was further complicated by the fact that both the viewpoint and the represented subject matter were in motion. If we speculate on this, we might want to discover the two systems of coordinates of Einstein's theory of relativity in this situation. From the point of view of art, the most exciting product of the theory of relativity was making the notion of space-time imaginable and this obviously opened possibilities for its artistic representation. Duchamp attempted to do this by using Poincaré's theory of dimensions and studying 17th-century French works of anamorphosis. Exploring his *chef d'oeuvre The Big Glass* with the help of Jean Clair's analysis we can approach Duchamp's notion of anamorphosis. Glass, the material vehicle of the work is itself an allusion to the first perspectivists: *pariete di vetro* was Leonardo's phrase when he defined the painting as transparent glass. The lower section of *The Big Glass* is obviously in keeping with the rules of classical perspective. On representations like this (the kind the Paris

friars were already making back in the 17th century) the upper part above the perspectivic representation of the lower section usually contains the geometric representation, or projection, of the objects that appear in the lower section; in this case, the horizontal line that was the horizon of the picture in the lower half will now serve as the base line of the frontal plane of the picture in the upper section. Duchamp retains the principle of this system but executes it in a reversed manner. Instead of going back to two-dimensional projections he attempted to represent the fourth dimension on the upper plane of glass, in "the realm of the Bride", to represent the projection of something existing in the fourth dimension that we can actually perceive and comprehend in the form these (possible) projections, or casting moulds as Duchamp called them, are embodied in our own dimension. What happens if we switch between these dimensions? We can conceive of an infinite number of lines of different length behind a one-dimensional dot, just as a straight line can be the projection of any of a great number of geometrical figures, and so on... Thus, plane is the projection of space and obviously there appears an infinite number of expressions of the fourth dimension in a single possible projection, or, if you like, an operation of anamorphosis. In a more poetic language Shakespeare conjectures the same: we are all shadows of a thing larger than we are and what we could become. Or, as Poincaré formulated it in a more precise language, the projection of an  $n$  dimensional universe is an  $n-1$  dimensional universe. Duchamp's last work *Etant donnés* (better known as *Reclining Nude*) is actually a form of anamorphosis: it is a large-sized perspective closet. It is similar to those Dutch "peep shows" we discussed in connection with Hoogstraten. Looking in the peephole we see the undressed bride herself represented in an exaggerated naturalistic manner that, despite its hyperrealistic style, the spectacle feels totally unreal. In spite of the almost *trompe l'oeil*-type execution, the spectator's impression is that what he sees is the illusory projection of some unknown reality only, or, if you like, a retreat by one dimension, and this means that *Etant donnés* can be interpreted as the solution of the problematic posed by *The Big Glass*.

Salvador Dalí was fascinated by anamorphosis because anamorphosis gave him the conviction that two contradictory truths can find expression in the same single statement. This is *veritas duplex* or even *veritas multiplex*, the multiplicity of truths that different dimensions and projections of anamorphosis can reveal to us, and this makes us recall another Mannerist master, Arcimboldo of Milan. Since the eponymous exhibition in Venice 1988 the term "Arcimboldo effect" has been used to describe the method of representation when the image (in most cases, a human face) is "built up" of various object, for instance, shells and scallops. The Paris friars already attempted to combine the Arcimboldo method and perspectivic anamorphosis with some success, though the little figures placed on elongated anamorphic compositions never became part of the picture as they seemed objects externally applied to the picture. Giving a role to mirror anamorphosis was, to my knowledge, something Dalí tried to do first in two of his small watercolours. For him, anamorphosis and the Arcimboldo effect were form of self-concealment as well as this exhibitionist painter seemed, all throughout his life of constant posturing, to hide his real self behind the gaudy externals of his behaviour. *Larvatus prodeō*, "I wear a mask," he could have said with Descartes and he used this quotation from the French philosopher for the epigraph of his novel *Hidden Faces*.

Confusing and paradoxical spatial illusion characterises the peculiar works of British artist Patrick Hughes, which challenge the conventions of perspective. He started a series in the sixties, which he entitled *Sticking Out Rooms*, where the underlying idea is the paradox that a painting is both object and illusion simultaneously. He explains that he is interested in space and

the reverse of space; we should add that time is equally important for Hughes as the effect of his painting, when we walk past them slowly, is like a slow-motion cinematic lap dissolve. *Tabula scalata* was the old name for this kind of picture, which used to have a tradition in England, too.

The Swedish artist Hans Hamngren has a drawing of a small, naked human figure entitled *Homunculus* and this term so often used in the literature of alchemy (where it means an artificially created human being) might recall for us the heroic age of anamorphosis and the connections of the genre with medieval magic. In his beautiful lithographs while Hamngren uses the anamorphosis of the mirroring cylinder for the spatial resurrection or, as the case may be, the concealment of representation, he also foregrounds the genre itself. He directs attention to the principle of the system, he leaves the designing lines unerased, and provides the spectator with accompanying diagrams to help him select the right viewing angle. Apart from the designing methods of the Paris friars, the Swedish artist's works reveal the most about the way this "cylindrical" anamorphosis works: for instance, the way he exploits the full surface of the cylinder. Strangely enough, this very obvious idea that the spectator can walk around the cylinder seems but seldom used by artists.

That photography is easily adjustable to anamorphosis was discovered almost simultaneously with the invention of the medium. In the 1880s Louis Ducos Du Hauron made a series of self-portraits and published a book of anamorphic photographs.

The American Adalbert Ames, Jr. made a series of strange, psychologically grounded experiments which exploited the "inertia" of the human eye, our tendency to adhere to known and familiar shapes even when we realise that we are being visually "deceived." His most widely known works are the Ames chair and the Ames room, the latter of which was anticipated in Magritte's pseudo-perspectivic visions. Ames's initiative was seized on by Jan Beutner in the seventies, who in his experiments furnished the room with objects that made sense only when viewed from a specific angle. These experiments were made along the lines of Hoogstraten's peeping boxes.

The Dutch Conceptual Artist Jan Dibbets works with "viewed-at-an-angle" anamorphosis in his series *Perspective Corrections*. With him, the fixed point, the "single eye" or the "keyhole" is also the lens of the photographic or, less often, the cinematic camera by the use of which the lines he draws on the wall of his studio assume the regular form of figures in a plane or solids in space. It follows from both the spirit of Conceptual Art and Dibbets aesthetic position that it is no longer the represented subject matter that is important; instead, emphasis is on the nature of artistic expression itself. In Dibbets's view, anamorphosis is nothing else than the metaphor of art itself.

These methods were popular with practitioners of Conceptual Art; I recall seeing instances of these among the works of a friend of mine, Ferenc Ficzek of Pécs, who died very young. He developed Dibbets's idea one step further by placing or projecting his shapes onto where two or even three wall planes met. In a photography action, László Haris and György Szemadám used a form of anamorphosis to extend, through illusionary means, the real space of the staircase of an apartment house. In another experiment, in the course of a photography action entitled *Sign and Shadow* in 1975, László Haris traced, photographically, the changes and variations of the shadow of a regular rectangle-shaped piece of canvas on the irregular surface of a rock face all throughout an entire day. In his explanation added to the scenario of the experiment, Haris described the action as "the confrontation of the variable and the invariable," by which he seems to have suggested that we should consider, besides the "sign" and the "shadow" that appear in the photograph, also the camera the position of which is determined by

the vectors of the system (and this means considering ourselves) and the Sun's progress (and this means considering time). As for the "enjoyment" of works of *land art* we need to select, apart from the right viewing angle, the proper viewing distance as well, these works (like works of Conceptual Art) can be more widely appreciated only in the photographic or video documentation made of them. The Nazca figures in Peru, considered to be a distant anticipation, became known only after the invention of aviation while those patterns appearing in cornfields, attributed to extraterrestrials, could best be viewed from an UFO.

The works of Japanese artist Fujio Watanebe extend the range of classical mirror anamorphosis. He produces the paraphrase of the work of an unknown European artist by placing a round-shaped plastic work around a cone with a reflecting surface where the image aimed at, which is a skull, appears in the reflection on the surface of the cone of the surrounding plastic form. Here it is the strange reversal of dimension that has a confusing effect as earlier figures in a plane were transformed into "two-and-a-half" dimensional images while here a three-dimensional solid is reduced to its "two-and-a-half" dimensional reflected image. Shigeo Fukuda's works are similarly confusing. This Japanese artist, who takes pleasure in practising all the playful forms of art, has added a novel angle to the genre of perspectivic anamorphosis by his peculiar objects that make different sense whenever viewed from a different angle. One of his plastic work that represents a pianist will appear to represent a violinist if it is rotated by ninety degrees. Another type of his anamorphosis is even wittier. He makes objects or groups of objects which are, as proper forms of anamorphosis should be, amorphous, unintelligible shapes but when they are put in a certain light coming from a certain angle their shadow will make sense as an intelligent and identifiable form. One of his more spectacular pieces of sculpture is a chaotic floating assembly of tubes, screws and various machine parts that, when lighted from above, casts the shadow of a motorcycle on the ground plane. Douglas Hofstadter, or rather Wataru Watanebe, who uses Hofstadter's idea, takes this one step further: they use three spotlights and in the light that comes from three different directions the object so lighted cast the shadows of the first three letters of the alphabet on the spatial coordinates.

Getting back to Fukuda or at least using his Escher mockups as an excuse, I want to touch on another idea. This concerns the connection of so-called "impossible objects" with anamorphosis. Impossible objects are spatial formations that can be drawn without trouble but which are "nearly" impossible in space, or in a three-dimensional world. "Whoever makes a Design without the Knowledge of Perspective will be likable to such," Hogarth stated in an inscription to an engraving he made in 1754, in which he collected, possibly ironically, such impossibilities. Similar impossibilities occur in Piranese's *Prison Capriccios* and as early as on the illusionist facade of Holbein's long-demolished *House of Dances* there appeared such "impossibilities." Two mid-twentieth-century artists, the Swede Oscar Reuterswärd and the Dutchman Maurits Cornelius Escher created the whole of their oeuvre out of these impossibilities. In the eighties Fukuda created a series of three-dimensional mockups which, when seen from a certain angle, look very much like Escher's drawings but this magic works only when the spectator stands at this privileged spot. If the viewing angle changes, deception becomes immediately obvious and the ordered composition turns into a jumble of ramshackle bits and pieces of architecture. Simultaneously with Fukuda, a number of European artists including Sandro Del-Prete and Mathieu Hamaekers realise that forms thought to be impossible are inconceivable only to a mind conditioned by tradition and convention; in a more sophisticated and wayward reading - in an anamorphic vision, if you like - the same forms are no longer unreal. Perhaps the best known and simplest of these impossible objects is the

"tribad." It was "invented" by Roger Penrose when he was still a beginner in mathematics and he offered it to Escher. Later the Dutchman Bruno Ernst build this Penrose triangle and made a documentary photograph of the object. Only the mirror put next to the object revealed that what we thought was a triangle is in fact an ecstatic zigzag line.

Old masters like to dazzle the viewers of their pictures by painting faces the glance of which followed the spectator walking past in front of the painting. The effect of holograms is like this somewhat irritating experience; here information gained from different viewpoints looks back on us radiating a plastic effect. The Swiss artist Sandro Del-Prete based a few of his works on this affinity between "following-glance" paintings and holography.

I have tried to adduce a wide range of examples for anamorphosis starting with Leonardo and ending with the inventor of holography, Dennis Gabor. Now if I try to generalise the observation I made with regard to Dibbets (that anamorphosis is the metaphor of art or at least of "Apollonian" art in Nietzsche's famed distinction) I have my doubts straight away. Can we risk saying such a weighty and final thing about something which may very well be a simple method of artistic representation? If I want to be topical I could say that anamorphosis can be the symbol of the culture of crisis - the culture of changing viewpoints - in which we have to live but if it is the symbol of this crisis it is also the solution of this crisis. We should consider the dual nature of anamorphosis. Its is dissolution and resurrection, death and rebirth at the same time. The image must be first annihilated, dissolved in the distorting prison of the grid of perspectival trap in order to be revived, in a more perfect form than ever before, to create the illusion of spaciality, too. And we should not forget about another duality: the duality of an exact world of science and philosophy, which claimed anamorphosis as their own for a long time, on the one hand, and the world of illusion, of the arts on the other.

*Translated by Ferenc Takács*